REMEDIAL PLANNING ACTIVITIES AT SELECTED UNCONTROLLED HAZARDOUS SUBSTANCES DISPOSAL SITES IN A ZONE FOR EPA REGIONS VI, VII, & VIII

U.S. EPA CONTRACT NO. 68-W9-0032

SCREENING SITE INSPECTION REPORT
FOR
SITE ASSESSMENT ACTIVITY
AT
MOUND STREET PCB SITE
ST. LOUIS, MISSOURI

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Work Assignment No.: 037-7JZZ

June 6, 1996

Prepared for: U.S. Environmental Protection Agency

Prepared by:

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> 30024383 Superfund

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1.0 INTRODUCTION

Under authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), Sverdrup Corporation, Inc. (Sverdrup), was tasked by the U. S. Environmental Protection Agency (EPA) Region VII, under Work Assignment Number 37-7JZZ, to conduct a Screening Site Investigation (SSI) at the Mound Street PCB Site located in St. Louis, Missouri. The CERCLIS I.D. number for the site is MO0000093682. St. Louis, Missouri is located in St. Louis County, on the eastern edge of the state. Sverdrup conducted SSI field activities during the week of April 1, 1996.

1.1 SCREENING SITE INSPECTION OBJECTIVES

The objectives of the Mound Street PCB SSI were to investigate the threat to human health and the surrounding environment associated with this site, and in particular, the potential for polychlorinated biphenyl (PCB) contamination. These objectives were evaluated by the verification of benzene and polynuclear aromatic hydrocarbon (PAH) contamination in the shallow alluvial aquifer, verification of soil PAH concentrations, identification of PCB levels below detection limits, and the associated potential impact of contaminants to human health and the environment. The surface water pathway is the primary pathway of concern for the site. The groundwater and soil exposure pathways are of concern in that they contribute to the surface water pathway.

Groundwater sampling and identification of contamination has previously been conducted adjacent to this site, as part of an SSI on the former Laclede Coal Gas Facility. The Mound Street PCB Site is a subsite of the Laclede Coal Gas Site. Contaminants (benzene, PAHs, and cyanide) have been detected in existing monitoring wells. These monitoring wells were installed in a water bearing zone on the west side of the St. Louis concrete flood wall, constructed by the Army Corps of Engineers. There is no groundwater use on the site or within a 4-mile radius of the site on the Missouri side of the Mississippi River. St. Louis and Illinois cities obtain drinking water from intakes located on the Mississippi River; however, only one drinking water intake is located within the 15-mile target distance limit. Several Illinois cities obtain drinking water from the groundwater; however, they are beyond the 4-mile radius target distance.

Soil sampling and identification of contamination has previously been conducted adjacent to this site, also as part of the SSI on the former Laclede Coal Gas Facility. Contaminants include benzene, toluene, xylene, PAHs, and cyanide. These identified contaminants were detected in shallow soil samples and in deeper samples collected during Field Analytical Support Program Screening in boreholes.

Surface water and sediment sampling have previously been conducted adjacent to this site, also as part of the SSI on the former Laclede Coal Gas Facility. Contaminants included PAHs, metals, and cyanide.

Oil samples were collected from the basement of the Mound Street PCB Site building during two different investigations; six samples by the St. Louis Division of Health, and six samples by the E&E/FTT during the Preliminary Assessment (PA) site reconnaissance of the Mound Street Power Plant Site. Two additional samples were collected from manholes in Mound Street by the E&E/FTT during the PA site reconnaissance. The oil samples were analyzed for PCBs, with all results being below the detection limits for PCBs.

1.2 SCOPE OF WORK

The scope of this SSI activity includes the following tasks:

- Review site-specific background information, including the PA report for the Mound Street PCB Site and documents related to the Laclede Coal Gas Facility.
- Prepare a Management Work Plan (MWP) for the activities at the site to include reports and other deliverables to be generated, a level of effort (LOE) schedule, along with an activity schedule with milestone completion dates. The MWP for the Mound Street PCB site was submitted to Region VII EPA on October 12, 1995.
- Conduct a site reconnaissance to verify site conditions and obtain additional background information. The site reconnaissance at the Mound Street PCB site was conducted by Sverdrup personnel on December 6, 1995.
- Conduct a SSI scoping meeting with the Region VII EPA Site Assessment Manager (SAM) to propose a strategy for sampling the site with available resources. The scoping meeting was held at the Region VII EPA headquarters on December 20, 1995.
- Prepare a Field Sampling Plan (FSP) for the site to include sampling procedures, field methods, proposed sample locations, analytical services request (ASR), quality assurance and quality control (QA/QC) measures, and project management. The FSP for the site was approved by Region VII EPA on March 26, 1996.
- Conduct sampling activities as per the sampling strategy discussed in the scoping meeting and procedures outlined in the FSP. Sampling activities at the site were conducted on April 2 -3, 1996.
- Calculate a draft site score using Site Inspection Worksheets so that a priority for future work at the site, if warranted, can be assigned.
- Prepare a draft SSI report including a summary of site-specific information. The summary includes analytical results collected by Sverdrup and additional site recommendations.
- Prepare a final SSI report, incorporating any revisions requested by the Region VII EPA comments.

2.0 SITE DESCRIPTION

2.1 SITE LOCATION

The Mound Street PCB Site is located in the City of St. Louis at the eastern end of Mound Street (near the intersection of Mound Street and First Street) (Figure 1). The site is on the western side of the concrete flood wall constructed along the Mississippi River by the U.S. Army Corps of Engineers. The geographic coordinates of the site are 38° 38' 34.0" north latitude and 90 10' 57.2" west longitude (Reference 8). The site can be reached by traveling north on Broadway from Interstate 64, or south on Broadway from the Salisbury Street exit off Interstate 70. From Broadway take Mullanphy Street east, and turn north (left) onto a gravel roadway just past the Petroleum, Fuel and Terminal-Apex Oil (PFT-Apex Oil) facility on the left. Take the gravel roadway north to Mound Street. The site is encompassed by Mound Street, the gravel roadway, and the PFT-Apex Oil facility (Figure 2).

2.2 SITE DESCRIPTION AND OPERATIONAL HISTORY

The Mound Street PCB Site is part of the Laclede Coal Gas Site (MOD981715980). The Laclede Coal Gas Site also includes the PFT-Apex Oil facility located west and south of the Mound Street PCB Site (Figure 3).

The total area of the Mound Street PCB Site is estimated at approximately 1.5 acres (References 15 and 23). The buildings on the site were demolished in 1991, and the property currently has no structures upon it (Appendix A, Photo 1). The property is owned by McKinley Iron, Inc. located at 3620 North Hall Street, St. Louis, Missouri. Mr. Herman Gellman, representative of McKinley Iron, was present during a portion of the SSI site reconnaissance activities conducted at the site on December 6, 1995. Mr Gellman was interviewed during the site reconnaissance. He did not know if the basement walls and floor were removed during building demolition. He did state that the basement area was probably filled with demolition debris. He was not aware of any unusual observations made, such as stained soil or odors, during the building demolition. He estimated the basement depth to be between 12 and 14 feet. Mr. Gellman stated the property was originally purchased from Union Electric to salvage power plant equipment.

The site is roughly rectangular in shape and is bordered on three sides by industrial property (Figure 2). Gravel roads are located along the property perimeter, with Mound Street being the northern boundary. An east-west dirt path has been made across the property. No fencing or other barrier exists around the property. Bricks, rock, wood, metal, brush, and concrete debris are located on the southern portion of the property. Several small soil piles were observed along the southeastern edge of the property (Appendix A, Photo 2). Two 55-gallon drums were also observed adjacent to the debris. No visible markings were noted on the drums and no attempt was made to open them. The contents of the drums are unknown. The northern portion is overgrown with grass and weeds and other vegetation (Appendix A, Photo 3). The general surface runoff is toward the east and south. To the east is vacant property with railroad tracks, the concrete flood wall; and then the Mississippi River (Reference 23).

The St. Louis Metropolitan Sewer District (MSD), Brooklyn Street pump station is located approximately 575 feet north-northeast of the site. The pump station is located on the west side of the flood wall (Appendix A, Photo 4). Two wells sampled in 1991 by E&E/FTT and three manholes sampled by MSD in 1993 were identified (Figure 2). An abandoned pump house, once part of the Mound Street Power

Plant, is located on the east side of the flood wall. The abandoned pump house is in poor condition. At the time of the site reconnaissance visit, the water level of the Mississippi River was at the bottom of the pump house. According to Mr. Gellman, the property occupied by the abandoned pump house was deeded to the City of St. Louis for the construction of a bike path along the river (Reference 23).

The site is part of the Laclede Gas and Light Company former manufactured gas plant (FMGP), which operated in the late 1800s to the mid-1940s (Figure 3). Laclede Gas used a retort process for coal carbonization in the generation of gas. Approximately 930 million gallons of coal tar waste were produced at this facility. It is estimated that approximately 76 percent of the waste was sold, with the remaining 24 percent being buried on-site (Reference 4). This equates to approximately 224 million gallons of coal tar waste potentially buried at the site. On-site burial was typically conducted in unlined pits. In 1940, operations were split between Laclede Gas Light Company (Laclede Gas) and Laclede Power and Light Company (Laclede Electric) (References 3 and 4).

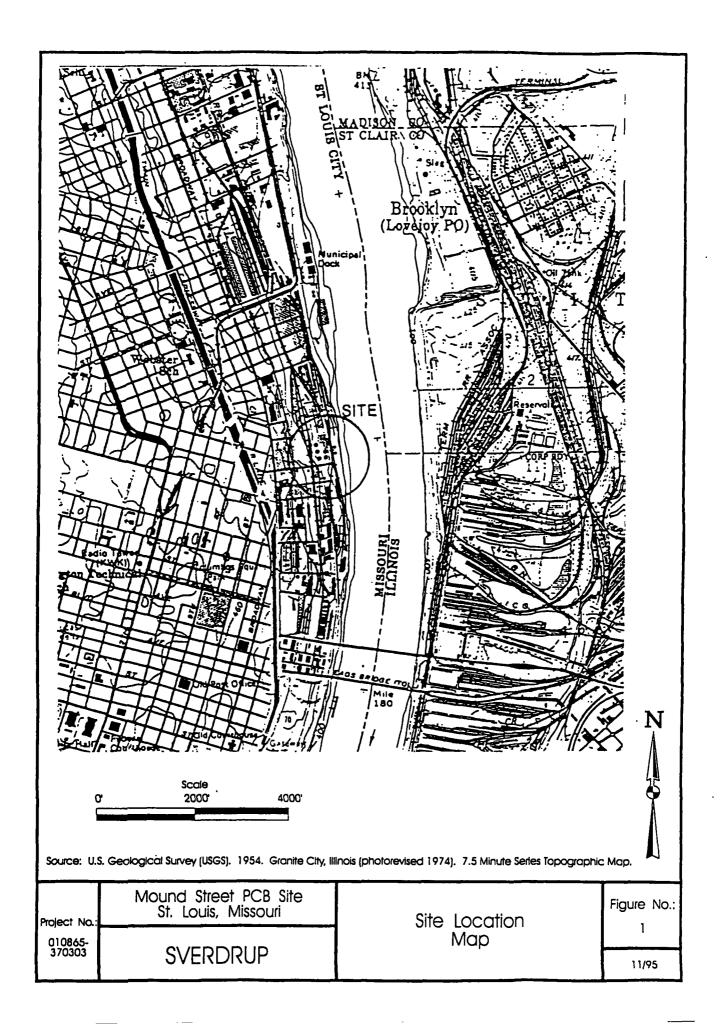
In 1945, Union Electric (UE) purchased the entire coal gas facility and operated the Mound Street Power Plant from 1945 to 1973. UE did not manufacture coal gas at this site. In 1969, the Apex Oil Company purchased the former coal gas works (Laclede Gas) from UE. UE, however, continued to operate its electrical facility from the former Laclede Electric works (Figure 4). The Apex Oil Company utilized the site as a tank farm for the storage of petroleum fuels until the mid-1980s, when it became an asphalt product terminal (Figure 4; References 3 and 4). The PFT-Apex Oil facility is currently still operating at this location.

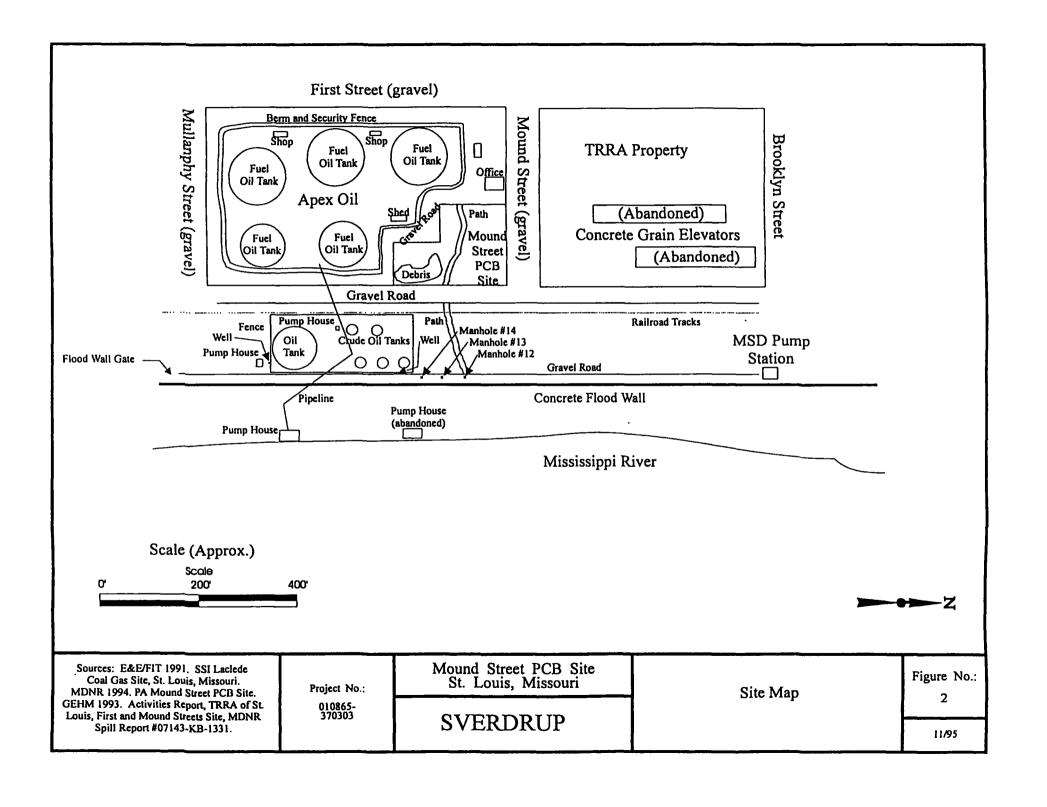
In 1973, the UE property (Laclede Electric works) was transferred to the Tenlis Company. Tenlis dismantled the power generation and transmission equipment. Transformer oil was reportedly disposed by Midwest Oil Company. The dismantled equipment was sold as scrap metal (Reference 4).

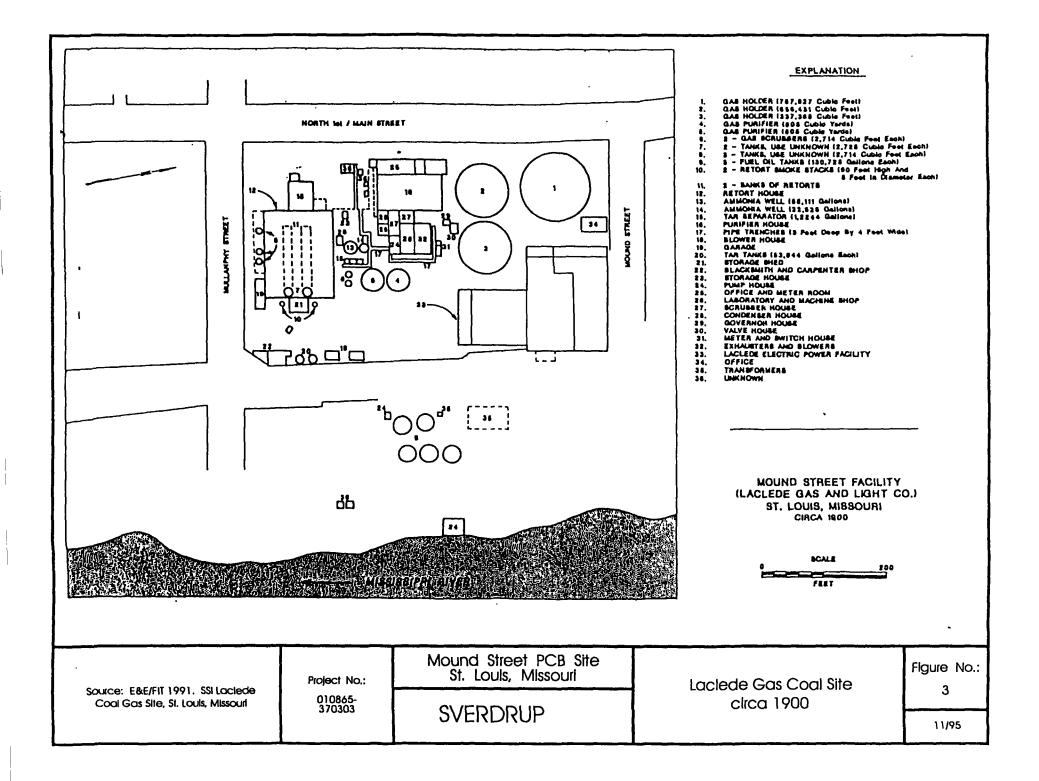
In 1981, Tenlis transferred the property to AZCON (Reference 3). The operations of AZCON are unknown; however, it was reported in the MDNR PA report that AZCON could have been a metal recycling company (Reference 15).

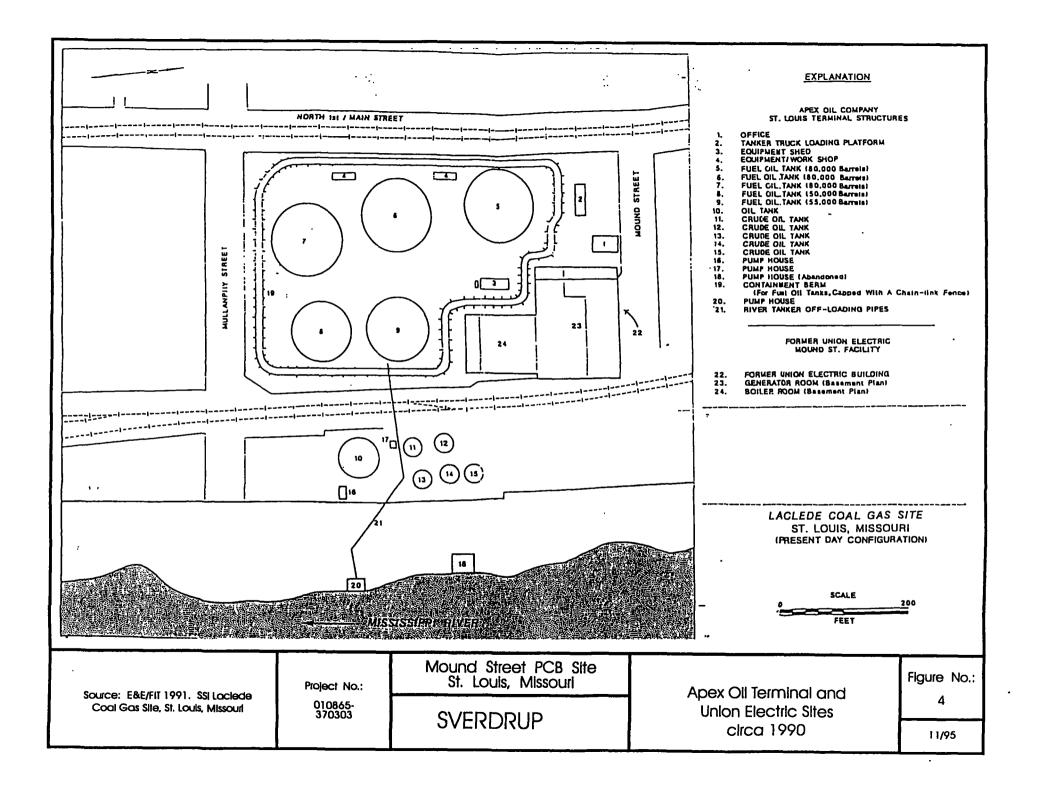
In 1985, Mound Street Corporation became the property owner and leased the building to an individual for an electric motor stripping operation (Reference 3). An oil fire occurred in the basement of the building in 1989, and the building was demolished in the spring of 1991 (Reference 15).

McKinley Iron became the owner of the property in 1993 (Reference 15). The property does not have any buildings or other structures, and is currently vacant (References 7 and 23).









2.3 PREVIOUS INVESTIGATIONS

The Mound Street PCB Site has had numerous investigations conducted since 1976.

- The U.S. Coast Guard investigated oil slicks in the Mississippi River, in the vicinity of the Mound Street PCB Site, three times between 1976 to 1987. The oil slicks were reportedly originating from the Mound Street Power Plant. The basement of the Mound Street Power Plant was the suspected source of oil; however, no specific source was identified. No samples were collected during any of the Coast Guard investigations (References 3 and 4).
- The St. Louis City Division of Health conducted an investigation of the Mound Street Power Plant on April 8, 1987. Six oil samples were collected from the basement of the Mound Street building and analyzed for PCBs. No PCB contamination was identified; however, detection limits were not recorded (References 3 and 4).
- The Ecology and Environment/Field Investigation Team (E&E/FIT) submitted a PA report of the Mound Street Power Plant Site on June 23, 1988. The field activities were conducted on September 17, 1987. Six oil, water and oil/water mixture samples were collected from the Mound Street building basement and two from manholes in Mound Street during the PA site reconnaissance (Figure 5). The samples were analyzed for PCBs. No PCB contamination was detected at a 1 mg/kg detection limit in any of the samples. The source of oil in the basement of the Mound Street Power Plant building (Mound Street PCB Site) was potentially identified as the adjacent PFT-Apex Oil terminal. It was stated in the report that PFT-Apex Oil had numerous spills, some of which entered the Mound Street building basement. Transformers and hydraulic oil tanks, located in the Mound Street building basement, were supposedly drained and removed in the 1970s; however, no records confirming the proper disposal of oil were available.
- The E&E/FIT conducted a site reconnaissance of the Laclede Gas and Light FMGP on November 20, 1990 for the preparation of the SSI work plan. Seepage was observed emanating from the foundation and piping system of an abandoned pump house, formerly part of the Mound Street Power Plant. The pipes were reportedly plugged with concrete; however, seepage was leaching through the concrete. The pump house is located on the eastern side of the flood wall, therefore, the seepage was going directly into the Mississippi River. No samples were collected and no description of the seepage material was made during the site reconnaissance (Reference 3).
- The E&E/FTT submitted an SSI report on the Laclede Gas and Light FMGP Site on October 29, 1991. Field activities for the SSI occurred on March 3-9, 1991. Subsurface soil, surface soil, sediment, surface water and groundwater samples were collected on and around the PFT-Apex Oil property. No samples were collected from the basement of the Mound Street Power Plant Building (Mound Street PCB Site), as originally planned, since the building was being demolished at the time of the SSI field activities. Numerous samples were collected in the vicinity of the Mound Street PCB Site. Only these sample results will be discussed below. Five borehole screening locations, four surface soil sample locations, three groundwater sample locations, three surface water sample locations, and three sediment sample locations are in the vicinity of the Mound Street PCB Site (Figures 6a and 6b). Screening results indicated the presence of benzene, toluene, xylene and PAHs in the subsurface soil in the vicinity of the Mound Street PCB Site (borings B01, B02, B03, B17 and B18). Boring B23 was utilized as a background location, and the results showed nondetect for volatiles, metals, and semivolatiles. Screening values for surface

water samples were nondetect for the same parameters. Screening analysis of sediment samples indicated the presence of xylene and PAHs. Surface and near-surface soil samples submitted for CLP analysis were collected from the 0 - 2 foot depth interval. Samples were analyzed for semivolatiles, total metals and cyanide. Cyanide and PAHs were detected above the background detection limits. Metal concentrations were negligible when compared to background levels. Sediment samples submitted for CLP analysis were analyzed for total petroleum hydrocarbons, volatiles, semivolatiles, cyanide and total metals. The extreme upgradient sample (Sample 402) exhibited the highest concentrations; however, results are comparable between sediment sample locations. No background sediment sample was collected. Analytical results for the soil screening samples, sediment samples and surface soil samples are shown in Table 1.

Five groundwater samples were collected (Samples 201, 202, 203, 204 and 206) and analyzed for volatiles, semivolatiles, cyanide and total metals. Groundwater sample analysis showed 65 ug/L acenapthalene, 25 ug/L fluorene, 46 ug/L phenanthene, 93 ug/L benzene and 1600 ug/L cyanide in Well 204. Well 203 sample analysis did not show any contamination except for 590 ug/L cyanide. Both cyanide results are "J" coded because the data did not strictly meet all QC criteria. procedures. Well 206 (background) did not show any contamination above detection limits.

Arsenic, barium, copper, chromium, nickel, selenium, vanadium, and zinc were not detected in four surface water samples (Samples 301, 302, 303 and 304), except as indicated. Surface water sample analysis showed lead levels at 7.0 ug/L for 301, 7.2ug/L for 301D, 9.7 ug/L for 302, <24 ug/L for 303, 18 ug/L for 304, and 15ug/L for 304D. Sample location 303 also showed barium at 280 ug/L, vanadium at 62 ug/L, zinc at <89 ug/L and an invalid selenium result of 11 ug/L. Sample location 304 and 304D showed chromium at 14 ug/L and 12 ug/L, respectively. Sample location 304 also had a result of 54 ug/L for zinc. Sample 304 was collected from the Illinois-American Water Company surface intake located across the Mississippi River from the site. Sample locations are shown in Figure 6. Surface water samples were analyzed for total petroleum hydrocarbons, volatiles, semivolatiles, cyanide and total metals. None of the samples collected during the Laclede Coal Gas SSI were analyzed for PCBs.

In the E&E/FIT SSI report, it is stated that a mixed source is present since BETX compounds "are not considered abundant in coal tar." The PAHs and cyanide were attributed to the former coal gas operations. It was also stated that some PAH contamination may be attributed to the adjacent PFT-Apex Facility, which stores oil and asphalt.

On July 8, 1993 St. Louis MSD personnel discovered oil seeping into the Brooklyn Street storm water pump station, located at the eastern end of Brooklyn Street and approximately 400 feet north of the Mound Street PCB Site (Reference 7). This pump station is only operational during heavy precipitation or if the Mississippi River level is above flood stage. In July, 1993, the Mississippi River was above flood stage. A waste oil sample from the pump station wet well was collected and analyzed for PCBs by the MSD. A PCB concentration of 47 mg/L was detected (Reference 12). The possible source was identified as an underground storage tank (UST) on the adjacent property (Reference 20). On August 9, 1993, waste oil samples from three manholes located along the flood wall were collected and analyzed for PCBs by the MSD. These three manholes are part of the underdrain system for the flood wall and are not part of the storm sewer system. The concentrations of PCBs were 25.4 mg/L in Manhole F-GA1 (#12), 11.7 mg/L in Manhole F-GA1 (#13), 36.6 mg/L in Manhole F-GA1 (#14) (Reference 13). Five 55-gallon drums of waste oil were pumped out of the storm sewer by REACT Environmental Engineers and disposed of by

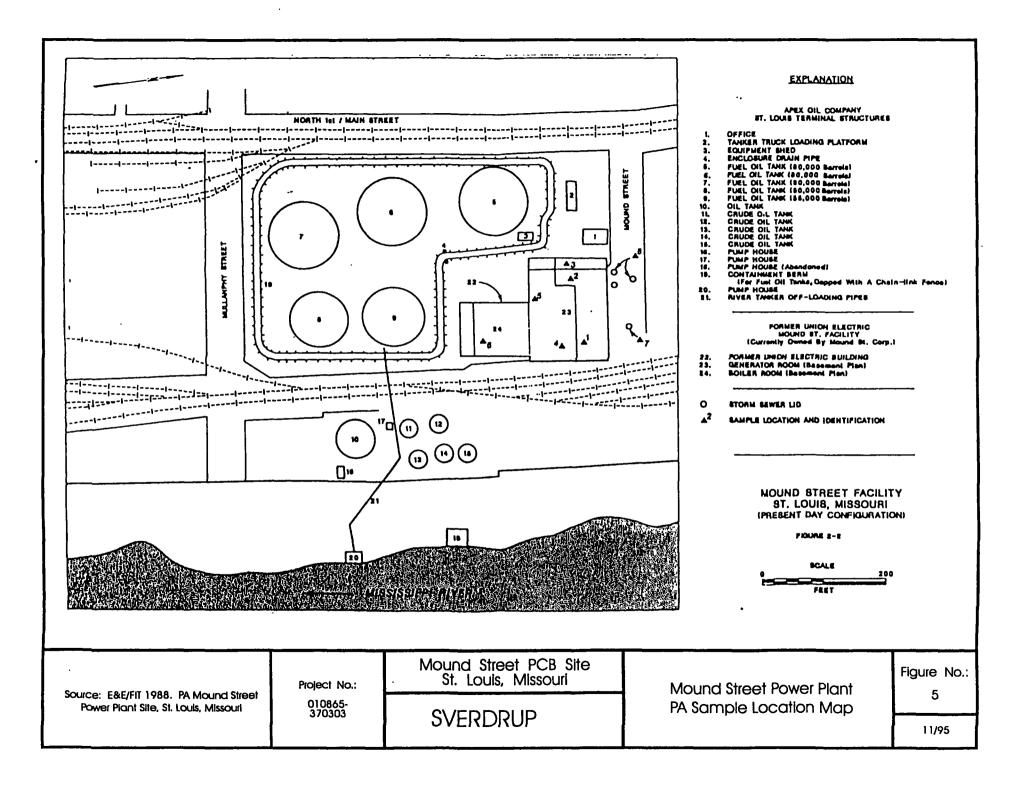
Tipton Environmental Services (References 5 and 7). In the conclusion of the Special Problem Investigation report completed by MSD, it is stated the UST appears to be the source of the oil in the pump station. It is further stated that ground saturation of oil from an old Union Electric facility is another possibility (Reference 20).

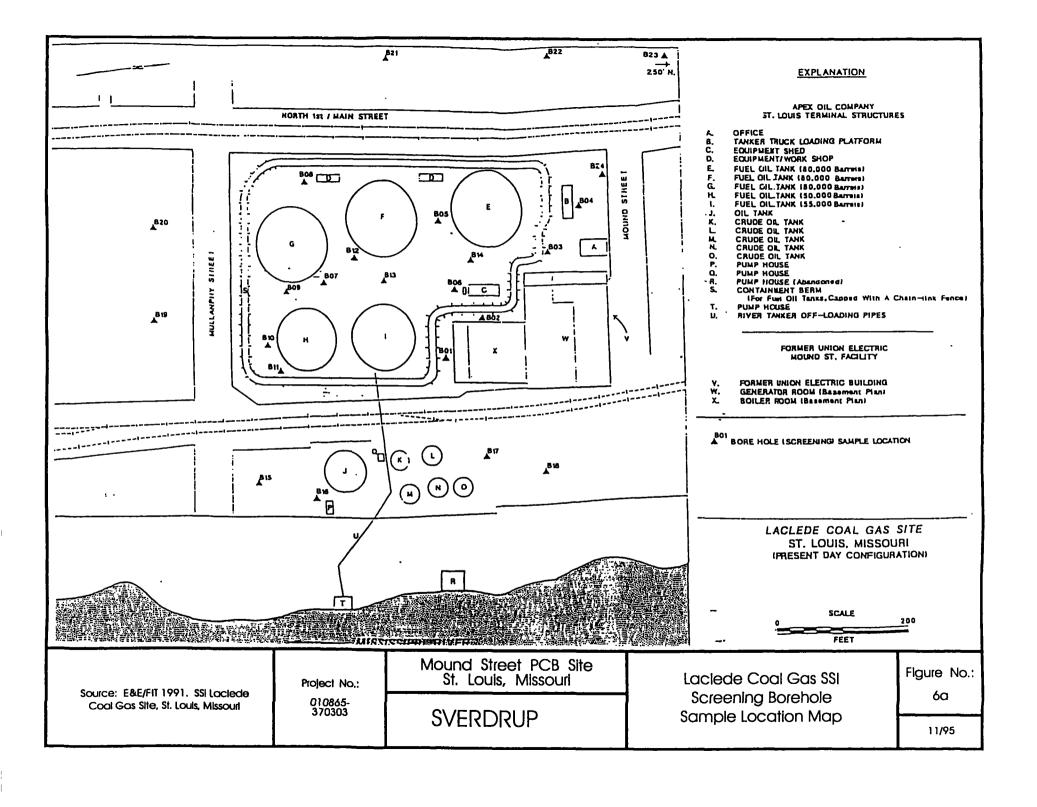
A 12,000-gallon UST (10.5 foot diameter by 18.5 feet long) containing petroleum products was discovered during an investigation to identify the potential source of the PCBs in the pump station (Reference 9). The UST was located on Terminal Railroad Association (TRRA) property. southwest of the Brooklyn Street pump station (Figure 7). The TRRA property is located on the north side of Mound Street, directly across from the Mound Street PCB Site (Appendix A. Photo 5). A sample was collected from the UST on July 14, 1993 by MSD. Sample analysis showed PCBs in the UST at 39 mg/L (Reference 12). The existence of the UST was unknown to TRRA prior to notification by the St. Louis Fire Marshall. The tank contents were removed on August 4, 1993 by Environmental Operations, under supervision by GEHM Corporation. Sixteen 55gallon drums of sludge/liquid were removed from the UST. Sample analysis of the tank contents showed PCBs at less than 10 mg/kg (Reference 9). Analysis of soil samples collected from the UST excavation showed PCBs at less than 0.05 mg/kg (Reference 10). Approximately 30 cubic yards of soil were removed during excavation of a 16 foot wide, 25 foot long and 12 foot deep UST pit. It is estimated that less than 50 gallons of water was in the UST pit after excavation activities (Reference 10); however, no sample of the water was collected. On August 17, 1993 EnTech Engineering, under supervision by GEHM Corporation, conducted an Infrared Thermograph (IR/T) survey of the TRRA Site. No evidence of a leak plume was identified during this study. An anomaly was discovered, approximately 10 foot square, on the Mound Street PCB property. Boreholes were attempted at the location of the anomaly; however, they were abandoned after auger refusal at a depth of 5 feet due to encountering solid rock debris (Reference 9). The foundation or basement of the demolished Mound Street Site buildings could explain the presence of the IR/T anomaly (Reference 7).

A letter from Randel Lewis, Terminal Manager for the Petroleum Fuel and Terminal Facility, to Charles Gay, St. Louis City Fire Inspector, was written in response to a September 8, 1993 telephone conversation. In the letter, Mr. Lewis stated that a leak in a 6-inch pipeline was discovered at the facility. Repairs to the pipeline were made with approximately 2.5 barrels of oil/soil being disposed of. It was further stated that the pipeline was taken out-of-service. The letter does not indicate where the pipeline was located.

The Missouri Department of Natural Resources (MDNR) submitted a PA report on the Mound Street PCB Site on March 21, 1994. Field activities for the PA occurred on November 11, 1993. No samples were collected during the PA. The conclusions of the PA report indicate that a threat from the groundwater pathway is very unlikely, a release to the Mississippi River appears likely, an exposure through the soil pathway is low and an exposure through the air pathway is also low.

No further incidences of oil in the Brooklyn Street pump station or manholes along the flood wall have occurred since the 1993 spill (Reference 6).





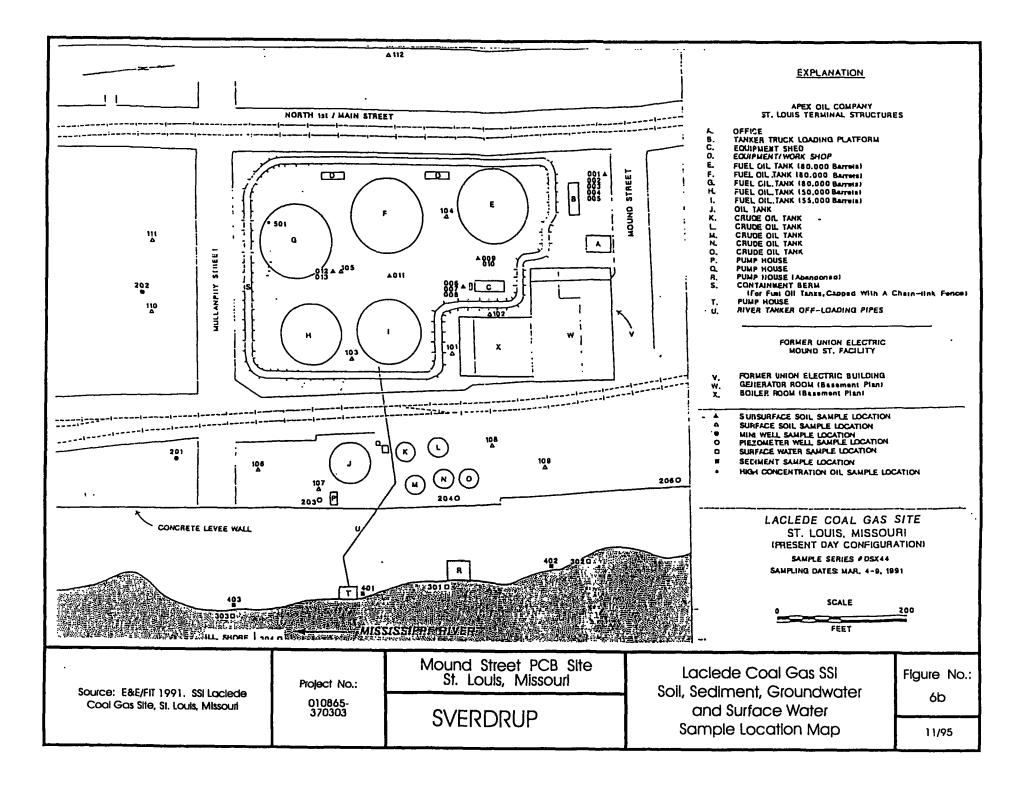


Table 1 Sample Analysis Results 1991 Laclede Coal Gas Site SSI St. Louis, Missouri

Sample No. (Refer to Figure 6a)	Benzene (ug/kg)	Toluene (ug/kg)	Xylene (ug/kg)	Fluor anthene (ug/kg)	Pyrene (ug/kg)	Benzo(k) fluor anthene (ug/kg)	Benzo(a) pyrene (ug/kg)	Comments
Field Analytical Support	Program - Mo	bile Laborator	y Screening Re	sults				
B01 (borehole soil sample)	1,200	380	1,700	16,000	3,700	NT ^A	NT	0-5 ft sample depth, same location as surface soil sample 101
B01 (borehole soil sample)	9,100	1,200	19,000	27,000	12,000	NT	NT	5-10 ft sample depth, same location as surface soil sample 101
B01 (borehole soil sample)	18,000	710	65,000	56,000	40,000	NT	NT	10-15 ft sample depth, same location as surface soil sample 101
B01 (borehole soil sample)	17,000	770	79,000	13,000	5,200	NT	NT	15-18 ft sample depth, same location as surface soil sample 101
B02 (borehole soil sample)	6,300	43,000	240,000	8,000	<500	<500	<500	0-5 ft sample depth, same location as surface soil sample 102
B02 (borehole soil sample)	6,100	1,700	57,000	15,000	NDB	ND	ND	5-10 ft sample depth, same location as surface soil sample 102
B02 (borehole soil sample)	69,000	110,000	570,000	ND	ND	ND	ND	10-15 ft sample depth, same location as surface soil sample 102
B02 (borehole soil sample)	7,500	650	33,000	ND	ND	ND	ND	15-21 ft sample depth, same location as surface soil sample 102
B03 (borehole soil sample)	1,040	22,000	22,000	<500	<500	<500	<500	0-5 ft sample depth

Table 1 Sample Analysis Results 1991 Laclede Coal Gas Site SSI St. Louis, Missouri (continued)

				(60)	illilided)			
Sample No.	Benzene (ug/kg)	Toluene (ug/kg)	Xylene (ug/kg)	Fluor anthene (ug/kg)	Pyrene (ug/kg)	Benzo(k) fluor anthene (ug/kg)	Benzo(a) pyrene (ug/kg)	Comments
Field Analytical Support I	Program Mo	bile Laborator	y Screening Re	sults				
B03 (borehole soil sample)	310	11,000	53,000	ND	ND	ND	ND	5-10 ft sample depth
B03 (borehole soil sample)	1,800	6,300	3,500	ND	ND	ND	ND	10-15 ft sample depth
B03 (borehole soil sample)	860	9,000	5,300	ND	ND	ND	ND	15-21 ft sample depth
B17 (borehole soil sample)	540	<250	21000	<500	<500	<500	<500	0-5 ft sample depth, ND for 5-33 ft sample depth except for 2,700 ug/kg m-xylene at 5-10 ft, same location as surface soil sample 108
B18 (borehole soil sample)	<250	<250	<250	<500	<500	<500	<500	0-33 ft sample depth, same location as surface soil sample 109
B23 (borehole soil sample)	<250	<250	<250	<500	<500	<500	<500	0-5 ft sample depth, background soil sample
401 (sediment sample)	<250	<250	<250	NT	NT	NT	NT	Sediment sample
402 (sediment sample)	<250	<250	1,600	<500	<500	<500	<500	Sediment sample
403 (sediment sample)	<250	<250	420	2,600	5,400	4,200	3,800	Sediment sample
301 (surface water sample)	<25	<25	<25	NT	NT	NT	NT	Surface water sample

Table 1 Sample Analysis Results 1991 Laclede Coal Gas Site SSI St. Louis, Missouri (continued)

				(con	mucu)				
Sample No.	Benzene (ug/kg)	Toluene (ug/kg)	Xylene (ug/kg)	Fluor anthene (ug/kg)	Pyrene (ug/kg)	Benzo(k) fluor anthene (ug/kg)	Benzo(a) pyrene (ug/kg)	Comments	
Field Analytical Support l	Program Mo	bile Laboratory	Screening Re	sults					
302 (surface water sample)	<25	<25	<25	NT	NT	NT	NT	Surface wa	ter sample
303 (surface water sample)	<25	<25	<25	NT	NT	NT	NT	Surface water sample	
Sample No. (Refer to Figure 6b)	Pyrene (mg/kg)	Benzo(k) fluor anthene (mg/kg)	Benzo(a) pyrene (mg/kg)	Benzo(b) fluor anthene (mg/kg)	Benzo(a) anthracene (mg/kg)	Chrysene (mg/kg)	Total PAHs (mg/kg)	Cyanide (mg/kg)	Comments
Surface Soil Samples C	CLP Analysis								
101 (B01)	ND ^B	ND	ND	ND	ND	ND	ND	33	0-2 ft sample depth
102 (B02)	21	ND	ND	ND	ND	ND	21	ND	0-2 ft sample depth
107 (B16)	ND	ND	ND	ND	ND	ND	73 ^E	14	0-2 ft sample depth
108 (B17)	ND	ND	ND	ND	ND	ND	9.8 ^F	98	0-2 ft sample depth
109 (B18)	6.7	3.4	4.2	4.9	4.5	4.3	40 ^G	35	0-2 ft sample depth
112 (B21, background sample)	1.4	0.68	0.7	0.61	0.79	0.85	6.8 ^H	<6.7	0-2 ft sample depth, background soil sample

Table 1 Sample Analysis Results 1991 Laclede Coal Gas Site SSI St. Louis, Missouri (continued)

				(com						
Sample No. (Refer to Figure 6b)	Pyrene (ug/kg)	Benzo(k) fluor anthene (ug/kg)	Benzo(a) pyrene (ug/kg)	Benzo(a) anthracene (ug/kg)	Benzo(ghi) perylene (ug/kg)	Phen anthene (ug/kg)	Fluor anthene (ug/kg)	Di-n-octyl phthalate (ug/kg)	Cyanide (ug/kg)	Total Hydro carbons (ug/kg)
Sediment Samples CI	P Analysis									
401	ND/960 ^c	ND/ND ^c	ND/430 ^c	ND/460 ^c	ND/ND ^c	ND/ND ^c	ND/750 ^c	ND/470 ^c	ND/ND ^c	3,100/ <3,100°
402	8,000	2,900	2,600	3,500	3,500	2,900	5,000	3,900	1,600	8,200
403	6,400J ^D	3,100	5,600	4,200	4,100	4,400	5,100	4,900	ND	4,900
	Arsenic (mg/kg)	Barium (mg/kg)	Copper (mg/kg)	Chromium (mg/kg)	Nickel (mg/kg)	Lead (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)	
401	3.7/4.0 ^c	140/140 ^c	9.1/8.2 ^c	8.7/9.0 ^c	10/11 ^c	30J/13J ^{C,D}	ND/ND ^c	15/17 ^c	35J/36J ^{C,D}	
402	8.4	160	26	16	18	36J ^D	2.0J ^D	27	77J ^D	
403	7.1	160	23	12	16	31J ^D	ND	25	64J ^D	

A NT = Not Tested.

B ND = Non detected.

C Sample results/duplicate results.

D J = Data did not strictly meet all QC criteria.

E 60 mg/kg naphthalene and 13 mg/kg 2-methylnaphthalene detected.

F 1.1 mg/kg naphthalene, 2.5 mg/kg 2-methylnaphthalene, 2.4 mg/kg acenaphthylene, 0.69 mg/kg acenaphthene, and 3.1 mg/kg fluorene detected.

G 0.51 mg/kg naphthalene, 0.46 mg/kg acenaphthylene, 2.2 mg/kg phenanthrene, 0.78 mg/kg anthracene, 2.8 mg/kg fluoranthene, 2.7 mg/kg ideno(1,2,3-cd)pyrene, and 2.6 mg/kg dibenzo(g,h,i)perylene detected.

H 0.44 mg/kg phenanthene, 1.3 mg/kg fluoranthene, and below detection limit of 0.41 mg/kg for remaining PAHs.

Source:

Reference 3.

3.0 SCREENING SITE INSPECTION WASTE AND SOURCE SAMPLING

3.1 SCREENING SITE INSPECTION (SSI)

Screening Site Inspection (SSI) field activities were conducted by Sverdrup personnel during the week of April 1, 1996. During the SSI scoping meeting, held on December 20, 1995, it was determined that the field activities would focus on obtaining data on PCB contamination at the site and the possible migration of contamination to the Mississippi River. Previous investigations have only focused on the FMGP source contamination. The sampling activities would include collection of groundwater samples from two existing monitoring wells, collection of subsurface soil samples to determine levels of contamination in the subsurface, and collection of appropriate QA/QC samples.

In order to demonstrate a release, sample locations must be chosen to demonstrate that the hazardous substance is present at levels significantly above the known background concentrations. Groundwater, soil, surface water and sediment sample data collected to date have all been analyzed for volatiles, semi-volatiles, cyanide and metals. Samples were collected from areas impacted by FMGP activities and background locations. Background is the ambient concentration of a hazardous substance and includes naturally occurring concentrations, concentrations from man-made sources other than the site being evaluated, and concentrations from the site. Generally, background levels are best supported by chemical analysis. The focus of the soil sampling activity was to obtain chemical data concerning contaminant concentrations in the soil.

The SSI field activities were conducted on April 2 - 3, 1996. Personnel involved in the SSI, their affiliation, and project responsibility, are as follows:

Pete Culver, U.S. EPA, Work Assignment Manager
Dave Crawford, U.S. EPA, Site Assessment Manager, Missouri
Herman Gellman, McKinley Iron, President
Tim Bishop, Petroleum, Fuel and Terminal, Facility Manager
Michael McCurdy, Sverdrup (EPA ARCS Contractor), Site Manager
Michael May, Sverdrup (EPA ARCS Contractor), Field Geologist
Randy Schademann, Ecology & Environment (EPA Contractor), Geoprobe™ Operator
Scott Hayes, Ecology & Environment (EPA Contractor), Field Technician
Andy Mazzeo, Ecology & Environment (EPA Contractor), Field Technician

3.2 SOURCE AREAS

The contaminants of concern at the Mound Street PCB Site originate from at least two separate sources; 1) coal gas operations, and 2) electrical power generation and transmission operations. The former is a source for coal tar wastes and spent oxides, while the latter is a potential source for PCBs. Coal tar wastes include PAHs and phenolic compounds resulting from combustion processes, and spent iron oxides resulting from gas purification processes. Benzene, ethylbenzene, toluene and xylene are possible constituents of coal tar wastes. Iron oxides may contain sulphur, cyanide and small quantities of coal tar. PCBs may be found in transformer and hydraulic oil.

Previous site industrial activities dictate the presence of oils; however, there is no documentation showing PCBs originating from the site. The exact source of the PCB contamination is unknown at this time.

3.3 SVERDRUP SSI SAMPLE LOCATIONS

Groundwater samples were collected from two existing monitoring wells installed by unknown parties on the adjacent PFT-Apex Oil Facility. Sample DC1CY-001/001D was collected from the South Well (Appendix A, Photo 7) and sample DC1CY-002 was collected from the North Well (Appendix A, Photo 8). These two wells are located between the potential source of PCB contamination (Mound Street Site) and the Mississippi River (Figure 8a). A summary of the samples collected is included in Table 2.

Subsurface soil samples were collected in the area of the former Mound Street building, and between the former building local and the Mississippi River (Figure 8b). Sample DC1CY-101 was collected near the southeastern corner of the former building local (Appendix A, Photo 9), with the intent of providing an impacted soil sample. Samples DC1CY-100/100D, DC1CY-102, DC1CY-103 and DC1CY-104 were collected between the former building local and the concrete flood wall (Appendix A, Photos 10 and 11). Samples DC1CY-102 and DC1CY-103 were collected in the same boring at depths of 18 to 20 feet and 25 to 27 feet, respectively. A summary of the samples collected is included in Table 2.

No surface water or sediment samples were collected and no air samples were collected as part of this investigation.

3.4 SSI SAMPLING RESULTS

A total of three groundwater samples, six soil samples, one aqueous rinsate sample, one water field blank, one water trip blank, and one soil trip blank were delivered to the Region VII EPA Laboratory on April 4, 1996. Samples were analyzed under activity number DC1CY. Lab analyses included the following methods:

VOCs: Water samples by Media-Group-Parameter (MGP) WV (water volatiles) and soil

sample by MGP SV (soil volatiles)

Semi-VOCs: Water samples by MGP WS (water semivolatiles) and soil sample by MGP SS

(soil semivolatiles)

PCBs: Water samples by MGP W24 (PCB - G. Beemont) and soil samples by MGP S16

(PCB - G. Beemont)

All samples were prepared as required, with appropriate acid preservatives added to the water sample, placed on ice, and a Field Chain of Custody was maintained according to EPA SOP 2130.2A, "Field Chain of Custody for Environmental Samples," May 1989.

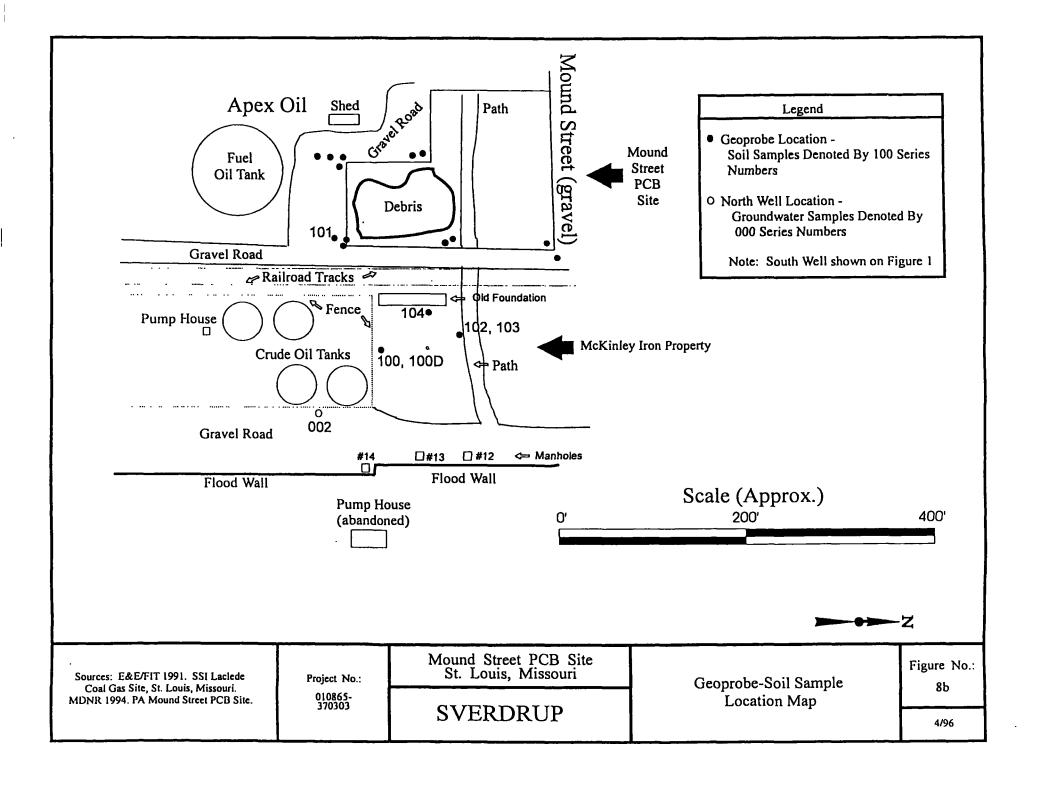
The SSI sampling data was validated by the Region VII EPA Laboratory.

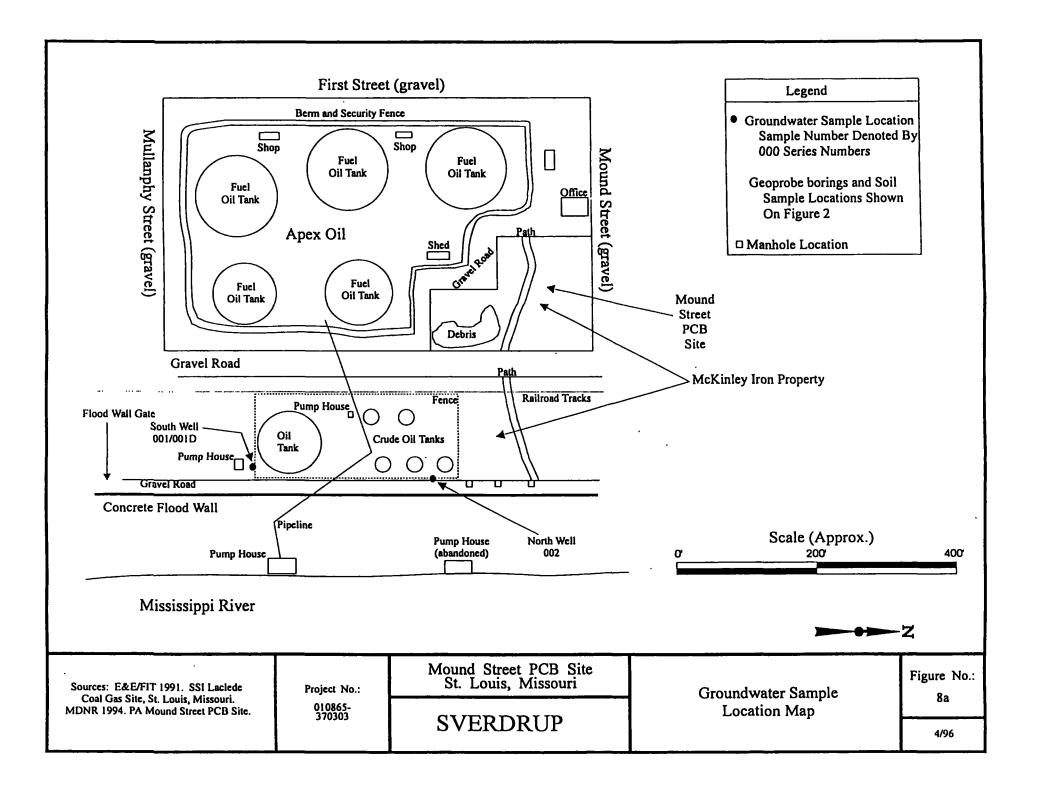
Table 2 Sample Summary Mound Street PCB Site St. Louis, Missouri Sample Series DC1CY April 2 - 3, 1996

Sample No.	Sample Description	Sample Location/Rationale	Analyses	Time/Date of Collection
DC1CY-001	Existing South Well (Water)	Existing Monitoring Well - South Well/Identify contamination in aquifer	VOC Semi-vol PCB	11:28/4-3
DC1CY-001D	Existing South Well (Water)	Duplicate of DC1CY-001	VOC Semi-vol PCB	11:28/4-3
DC1CY-002	Existing North Well (Water)	Existing Monitoring Well - North Well/Identify contamination in aquifer	VOC Semi-vol PCB	12:15/4-3
DC1CY-003F	Field Blank (Water)	QA/QC	VOC Semi-vol PCB	9:15/4-3
DC1CY-007F	Trip Blank (Water)	QA/QC (Provided by Region VII Laboratory)	VOC	
DC1CY-008	Equipment Rinsate (Water)	QA/QC	VOC Semi-vol PCB	16:10/4-2
DC1CY-100	Off-site Geoprobe™ Boring (Soil)	Off-site/Identify contamination migration toward the Mississippi River from the former power plant building location.	VOC Semi-vol PCB	15:30/4-2
DC1CY-100D	Off-site Geoprobe™ Boring (Soil)	Duplicate of DC1CY-100	VOC Semi-vol PCB	15:30/4-2
DC1CY-101	On-site Geoprobe™ Boring (Soil)	Potential source area/Identify contamination at the former power plant building location.	VOC Semi-vol PCB	10:05/4-2

Table 2 Sample Summary Mound Street PCB Site St. Louis, Missouri Sample Series DC1CY April 2 - 3, 1996 (continued)

Sample No.	Sample Description	Sample Location/Rationale	Analyses	Time/Date of Collection
DC1CY-102	Off-site Geoprobe™ Boring (Soil)	Off-site/Identify contamination migration toward the Mississippi River from the former power plant building location.	VOC Semi-vol PCB	14:20/4-2
DC1CY-103	Off-site Geoprobe™ Boring (Soil)	Off-site/Identify contamination migration toward the Mississippi River from the former power plant building location.	VOC Semi-vol PCB	14:20/4-2
DC1CY-104	Off-site Geoprobe™ Boring (Soil)	Off-site/Identify contamination migration toward the Mississippi River from the former power plant building location.	VOC Semi-vol PCB	8:40/4-3
DC1CY-108F	Trip Black (Soil)	QA/QC (Provided by Region VII Laboratory)	VOC	





Groundwater

A total of three groundwater samples were collected, prepared and delivered to the Region VII EPA Laboratory on April 4, 1996. All samples were analyzed for volatile organic compounds, semivolatile organic compounds and PCBs.

Prior to sample collection, the depth to water was measured using a Solinst electronic water level indicator. Depths were measured from the north side of the top of casing, which enabled the well volume to be calculated. The wells were purged until field parameters (pH, temperature, and specific conductance) had stabilized to within \pm 10 percent. Field measurements were obtained using a YSI Incorporated Model 3560 Water Quality Monitoring System. A summary of field measurements obtained is included in Table 3.

Well purging was performed at a very low flow rate using a TAT Engineering peristaltic pump at the South Well and Geopump peristaltic pump at the North Well, with disposable tubing replaced prior to sampling. Extreme care was taken to prevent collecting an obviously turbid sample. Water samples were collected immediately after completion of purging activities, using the peristaltic pumps. Samples for volatile organic compounds were collected first, then the semivolatile and PCB samples were collected.

Previous groundwater sample data compiled by the E&E/FIT show the presence of VOCs and PAHs. Groundwater sample results obtained from the Sverdrup field activity are summarized in Table 4. Complete analytical data reports are included in Appendix C.

The results of this sampling indicate the presence of benzene and PAHs in the groundwater. Benzene was detected in the North Well at 38 μ g/L. However, benzene was not detected above the 6 μ g/L detection limit in the South Well. PAHs detected in the North Well sample were acenaphthene at 86 μ g/L, fluorene at 29 μ g/L, phenanthrene at 26 μ g/L, and bis(ethylhexyl) phthalate at 32 μ g/L. All analyzed compounds were nondetect in the South Well. PCBs were below detection limits in both the North and South Well.

Groundwater data appears consistent with historical data obtained from the site. Groundwater samples collected in 1991 by E&E/FIT showed 65 ug/L acenapthalene, 25 ug/L fluorene, 46 ug/L phenanthene, 93 ug/L benzene and 1600 ug/L cyanide in Well 204 (North Well). Well 203 (South Well) sample analysis did not show any contamination except for 590 ug/L cyanide. Both cyanide results were "J" coded, meaning the data did not strictly meet all QC criteria.

Table 3 Field Measurement Summary Mound Street PCB Site St. Louis, Missouri April 3, 1996

Well	Well Depth (ft)	Depth to Water (ft)	Water Column (ft)	Estimated Purge Volume (gal)	Parameter Measurements	Comments
South Well	46.06	26.07	19.99	1.4	pH =6.84, 6.98, 6.95, 6.98 Temp =19.2, 19.5, 19.8, 19.9 Cond =.948, .830, .936, .935	Peristaltic pump rate approximately 0.03 gpm. Well casing has a 1.5-inch port for sampling.
North Well	47.27	24.68	22.59	1.4	pH =6.75, 6.80, 6.78 Temp =18.6, 18.8, 19.7 Cond =.963, .958, .963	Peristaltic pump rate approximately 0.06 gpm. Well casing has a 1.5-inch port for sampling.

Temp = $^{\circ}$ C. Cond = mhos/cm

Minimum purge volume = 3 well volumes or measured parameters within 10%

	Bonon Move Stayl	Table Froundwater Analy Mound Street St. Louis, M April 3, 1	ysis Summary PCB Site Wet	requiry	(#) Mawa 1300	4% MOWO 673
Well	Sample No.	benzene (ug/L)	2/00 49/f acenaphthene (ug/L)	flourene (ug/L)	phenanthrene (ug/L)	bis(2-ethylhexyl) phthalate (ug/L)
MCL		5				-
South Well	DC1CY-001	<7	<1.1	<5	<1.1	<10
South Well Duplicate	DC1CY-001-D	<6	<1.1	<5	<1.1	<10
North Well	DC1CY-002	39	86	29	26	32

MCL = Maximum Contaminant Level

<## = Not detected at indicated detection level Shading denotes well exceeds specific MCL or AL * acetone (common laboratory contaminant) was detected in sample 001 (South Well) at 7 μ g/L, and in 002 (North Well) at 8 μ g/L.

Subsurface Soil

A total of six subsurface soil samples, including one duplicate, were collected, prepared and delivered to the Region VII EPA Laboratory on April 4, 1996. All samples were analyzed for volatile organic compounds, semivolatiles and PCBs. No background sample was collected for this field activity. Background concentrations identified during the 1991 Laclede Coal Gas SSI conducted by E&E/FIT will be used. The soil samples collected in this SSI were then compared to the background levels to determine if significant contamination above background levels existed at the site.

Soil samples were collected April 2 - 3, 1996. Samples were collected from four discrete locations using a GeoprobeTM. The soil samples were collected from the following depths:

DC1CY-100	25 - 27 feet
DC1CY-101	17 - 19 feet
DC1CY-102	18 - 20 feet
DC1CY-103	25 - 27 feet
DC1CY-104	25 - 27 feet

Soil samples were collected by removing the sample from the sample tube and placing it in a disposable aluminum pan. GeoprobeTM boring rods and sample tube were decontaminated between samples.

Previous subsurface and surface soil sample data compiled by E&E/FIT show the presence of VOCs, PAHs and metals in the soils. Soil sample results obtained from the Sverdrup field activity are summarized in Table 5. Complete analytical data reports are included in Appendix C.

The soil sampling results for Sample DC1CY-102 indicate the presence of PAHs in the subsurface. Naphthalene was detected in Sample DC1CY-102 at 150 ug/kg, fluoranthene at 570 ug/kg, pyrene at 520 ug/kg, and carbon disulfide at 22 ug/kg. These results are less than the background levels identified below. Sample analysis showed levels of volatiles, semivolatiles and PCBs below the detection limits for the other sample locations (100, 100D, 103, and 104).

The compounds of concern were identified by comparing the average of the impacted area samples to the average background sample. Where the ratio of impacted sample to background sample exceeded 3, this material was assumed to have originated from site activities (U.S. EPA, 1992). Background for PCBs is assumed to be nondetect. Background levels for volatile organics and semivolatile organics were taken from the 1991 Laclede Coal Gas SSI conducted by E&E/FIT and are as follows:

Contaminant Pyrene Benzo(k)fluoranthene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(a)anthracene Chrysene Phenanthrene Fluoranthene Other PAHs Total PAHs	Concentration 1.40 mg/kg 0.68 mg/kg 0.70 mg/kg 0.61 mg/kg 0.79 mg/kg 0.85 mg/kg 0.44 mg/kg 1.30 mg/kg < 0.41 mg/kg	Contaminant Benzene Toluene Xylene Ethylbenzene	Concentration <0.25 mg/kg <0.25 mg/kg <0.25 mg/kg <0.25 mg/kg
Total PAHs	6.80 mg/kg		

Health based screening concentrations for soils correspond to a 10⁻⁶ individual cancer risk or a noncancer exposure level corresponding to a reference dose (RfD) under specific exposure assumptions. Based on the Laclede Coal Gas SSI sampling results, the cancer risk screen concentrations for benzo(a)pyrene (0.088 mg/kg), benzo(b)fluoranthene (0.88 mg/kg), benzo(a)anthracene (0.88 mg/kg), and ideno(1,2,3-cd)pyrene (0.88 mg/kg) have been exceeded in soil sample DSX44-109 (Reference 3 and 32). A cancer risk screen concentration for pyrene, cyanide, fluoranthene, acenaphthene, anthracene, and fluoranthene has not been assigned. The RfD for pyrene (2,300 mg/kg) was not exceeded is soil sample DSX44-102; for cyanide (1,600 mg/kg), fluorene (3,100 mg/kg), and acenaphthene (4,700 mg/kg) was not exceeded in soil sample DSX44-108; and for anthracene (23,000 mg/kg) and fluoranthene (3,100 mg/kg) in soil sample DSX44-109 (Reference 3 and 32). Thr RfD for benzene (22 mg/kg), toluene (16,000 mg/kg), and xylene (160,000 mg/kg) was not exceeded in any soil sampled (Reference 3 and 32). A cancer risk screen concentration and benchmark RfD for naphthalene, 2-methylnaphthalene, acenaphthylene, and phenanthrene have not been determined (Reference 32).

Surface Water

No surface water and sediment samples were proposed or collected during the April 1996 SSI activity.

Air Ouality

No air quality samples were proposed or collected during the April 1996 SSI activity.

Table 5 Soil Analysis Summary Mound Street PCB Site St. Louis, Missouri April 2 - 3, 1996						
Sample No.	naphthalene (ug/kg) 1910	fluoranthene (ug/kg)	pyrene (ug/kg)	oo carbon disulfide (ug/kg)		
DC1CY-100	<130	<100	<300	<8		
DC1CY-100-D	<130	<100	<310	<10		
DC1CY-101	<120	<98	<300	<6		
DC1CY-102	150	570	520	22		
DC1CY-103	<130	<110	<320	<6		
DC1CY-104	<130	< 100	<310	<6		

<## = Not detected at indicated detection level

^{*} acetone (common laboratory contaminant) was detected in sample 100 at 28 μ g/L, 101 at 18 μ g/L, 103 at 18 μ g/L, and 104 at 17 μ g/L.

^{**} methylene chloride (common laboratory contaminant) was detected in sample 100 at 17 μ g/L

3.5 MODIFICATIONS TO APPROVED FIELD SAMPLING PLAN

All SSI field activities were conducted in accordance with the Field Sampling Plan (FSP), approved by Region VII EPA on March 26, 1996 (Reference 24), and the Site Health and Safety Plan, approved by Sverdrup on February 8, 1996. Modifications to the FSP were as follows:

- 1) Soil and water sample numbers do not correspond to the numbers submitted in the FSP. The activity number is the same as submitted in the FSP.
- Numerous attempts were made to collect subsurface soil samples from the area around the former building location. The Geoprobe™ could not penetrate through a solid layer, believed to be concrete, at a depth of approximately 18 20 feet. Attempts were made to collect soil samples above this solid layer; however, none were able to be obtained except for the southeastern corner sample (Figure 8b; Appendix A, Photo 9). In the southwestern corner of the former building location, the Geoprobe™ could not go beyond 4 feet and in a two instances, 1 foot. Attempts near the northeastern corner of the former building location were made with refusal occuring at 15 feet. A sample was attempted; however, only a small amount of brick and gravel was retrieved in the sample tube. Along the eastern edge of the former building location, refusal occurred at 18.5 feet. A sample was attempted; however, only a small amount of concrete and brick was retrieved. Water was observed in the soil sample tube; however, there was not enough water to sample. Attempts to collect soil and water samples were halted in this area due to bricks, rock and concrete debris encountered at the former building site (Figure 8b).
- 3) Subsurface soil samples were collected in a vacant area between the former building location and the concrete flood wall (Figure 8b; Appendix A, Photo 10). Five subsurface soil samples were collected in three sample locations. Two samples were collected from the same probe boring at 18 20 feet and at 25 27 feet below ground surface. One sample and duplicate were obtained from two adjacent borings in one area (Appendix A, Photo 11). The fifth sample was obtained approximately half way between the other two locations (Figure 8b).
- 4) Well purging was performed using a peristaltic pump instead of the Geoprobe[™] vacuum system or disposable bailers. The peristaltic pump is more effective than the Geoprobe[™] vacuum system and bailers could not be used, due to the small (1.5 inch) sampling port diameter on the monitoring wells.
- Three well volumes were not extracted from the wells during purging activities. The water level was at 26.07 feet below ground surface at the South Well, and was at 24.68 feet below ground surface at the North Well. The bottom of the wells are 46.06 feet and 47.27 feet below ground surface for the South Well and North Well, respectively. Tubing was installed in the wells to pump from approximately 30 feet below ground surface. Pumping was conducted near the maximum head that the peristaltic pump could overcome. At the pumping rates attained by the peristaltic pumps, it would have required approximately 16 hours to remove one well volume. It was decided to collect water samples after the pH, temperature and conductivity parameters were within 10 percent for two consecutive readings, regardless of the volume removed.

3.6 QUALITY ASSURANCE AND QUALITY CONTROL

Quality Assurance/Quality Control (QA/QC) samples collected during the SSI include one groundwater duplicate (DC1CY-001D), one soil duplicate (DC1CY-100D), one water trip blank (DC1CY-007F), one soil trip blank (DC1CY-108F), one water field blank (DC1CY-003F), and one soil sample equipment rinsate (DC1CY-008) collected from the decontaminated sample tube.

Duplicate Analysis

Duplicate samples were used to measure sample homogeneity and precision. Field sampling precision is measured by the Relative Percent Difference (RPD) between the analytical results of the sample and its respective duplicate. The RPD is calculated by using the following equation:

RPD =
$$(|X_1 - X_2|)$$
 x 100 $(X_1 + X_2)/2$

Acceptance criteria specified for this investigation were defined in the FSP, and varied for water and soil matrices. One duplicate analysis was performed for each matrix, and included samples DC1CY-001-D for water and DC1CY-100-D for soil.

RPD data objectives outlined in the field sampling plan detailed a 20 percent RPD goal for water analyses, and a 35 percent RPD goal for soil analyses. All analyzed compounds from DC1CY-001 and DC1CY-001D water samples were below detection limits except for acetone. Acetone is a common laboratory contaminant, and was detected at 7 ug/L in Sample 001. Acetone was not detected in Sample 001D at a detection limit of 4 ug/L. Therefore, the RPD could not be calculated. The failure to meet RPD objective for water was not deemed significant. All analyzed compounds from DC1CY-100 and DC1CY-100D were below the detection limits except for acetone and methylene chloride. Both acetone and methylene chloride are common laboratory contaminants, and were detected at 28 ug/kg and 17 ug/kg, respectively, in sample 100. Acetone and methylene chloride were not detected in Sample 100D at a detection limit of 21 ug/kg and 70 ug/kg, respectively. Therefore, the RPD could not be calculated. The failure to meet RPD objective for soil was not deemed significant. The data and regulatory interpretation for both water and soil was not changed due to inability to calculate RPD values.

Field and Trip Blank Analysis

Two water blanks were included in this activity, a field blank (DC1CY-003F) and a trip blank (DC1CY-007F) and one soil blank, a trip blank (DC1CY108F). Field blanks were used as an indicator of sample contamination during the sample collection and handling activities, including sampling, transport, sample preparation, and analysis. Trip blanks were used to measure potential cross contamination during the shipping, storing, and transferring of samples.

The trip blank was prepared by the EPA Region VII Laboratory and carried in the iced sample cooler throughout the sampling event. The results of the water trip blank indicate the presence of acetone at 13 μ g/L. The results of the soil trip blank indicate the presence of acetone at 580 μ g/kg. Acetone is a common laboratory analysis contaminant. The soil trip blank results also indicate the presence of methyl ethyl ketone at 28 μ g/kg, 4-methyl-2-pentanone at 10 μ g/kg, 1,2-dichlorobenzene at 11 μ g/kg, 1,3-dichlorobenzene at 27 μ g/kg, and 1,4-dichlorobenzene at 26 μ g/kg. The source of these compounds is

unknown; however, they were not detected in any other sample. It appears as though no contaminants were introduced to the sample containers during sample control.

The field blank was prepared in the field, using deionized water. The water was slowly poured into the appropriate sample containers for volatile organic, semivolatile and PCB analysis. The sample results indicate the presence of acetone at $20 \,\mu\text{g/L}$. Acetone is a common laboratory analysis contaminant.

Performance Audit Sample Analysis

No performance audit sample was collected.

Equipment Rinsate Analysis

The rinsate sample was used to verify the effectiveness of the decontamination procedure. The rinsate blank was collected on April 2, 1996, at approximately 1610. The rinsate blank (DC1CY-008) was collected by pouring deionized water into the decontaminated sample tube used for collecting the soil from sample point DC1CY-100. Sample DC1CY-008 was analyzed for volatile organics, semivolatiles and PCBs. The results of this sample indicate the presence of acetone at $15 \,\mu\text{g/L}$. Acetone is a common laboratory analysis contaminant. The results of the testing indicate that effective decontamination procedures were being performed, with minimal cross-contamination of samples occurring due to incomplete decontamination processes.

4.0 GROUNDWATER PATHWAY

4.1 GEOLOGIC/HYDROGEOLOGIC SETTING

The Mound Street PCB Site is located on a "narrow strip of alluvium" between the Mississippi River and limestone bedrock located in the area. Fill material, estimated at 15 to 18 feet thick, overlays the alluvium at the site (Reference 10). Stratified river aluvium consists of silt, clay, and silty clay which becomes coarser with depth and includes gravel lenses. The alluvium can be up to 80 feet thick, with clay and silty clay at shallow depths and silty sand and sand in the deeper portions (Reference 21). Prior to construction of the concrete flood wall, several borings were conducted in the vicinity of the site (Figure 9a; Reference 26). The logs for four borings (Figure 9b) show cinders, concrete, rock, and bricks to depths of approximately ten feet below ground surface nearest the site (Borings 842 and 862) and to depths of 15 to 26 feet toward the Mississippi River (Borings 823 and 824). Silt, clay or a mixture of silt and clay are shown underlying the cinders to the limestone bedrock, which was encountered at 24 feet below the ground surface in Boring 842 and at 38 feet in Boring 862. Bedrock was not encountered in Borings 823 and 824 (Reference 26). No confining layer is known to exist between the alluvium and bedrock. Also, no aquifer discontinuity exists within the 4-mile target distance limit (Reference 21). Based on Geoprobe borings conducted during the April, 1996, field activities, the location of the former Mound Street Building is underlain by rock, concrete, bricks and other debris. On the vacant property east of the site, native silt material was encountered to a depth of 27 feet (Reference 25).

The bedrock consists of upper Mississippian limestone formations which are, in descending order, the Ste. Genevieve Limestone, St. Louis Limestone, shaley limestones of the Salem Formation and Warsaw Formation, Burlington-Keokuk Limestone, and Fern Glen Formation (References 3 and 21). These formations are approximately 600 feet thick (Reference 3). The depth to bedrock is estimated to be from 20 to 30 feet (Reference 3). The shallowest aquitard in the area is the Maquoketa Shale at the top of the Ordovician System (Reference 21).

The depth to groundwater is generally approximately two feet above the Mississippi River and is estimated at 20 feet (Reference 3). Groundwater movement is toward the river, to the east and southeast of the site (References 21 and 22). The groundwater depth was measured at 25 feet below the ground surface during the field activities for this SSI.

Sinkholes and caves are found in the Mississippian bedrock within the target area. The karst aquifer probably does not directly underlie the site and probably does not affect contaminant transport from the site (Reference 22).

4.2 GROUNDWATER SAMPLE RESULTS

Groundwater sample results obtained from this activity are summarized in Table 4 (Section 3.0). Complete analytical data reports are included in Appendix C.

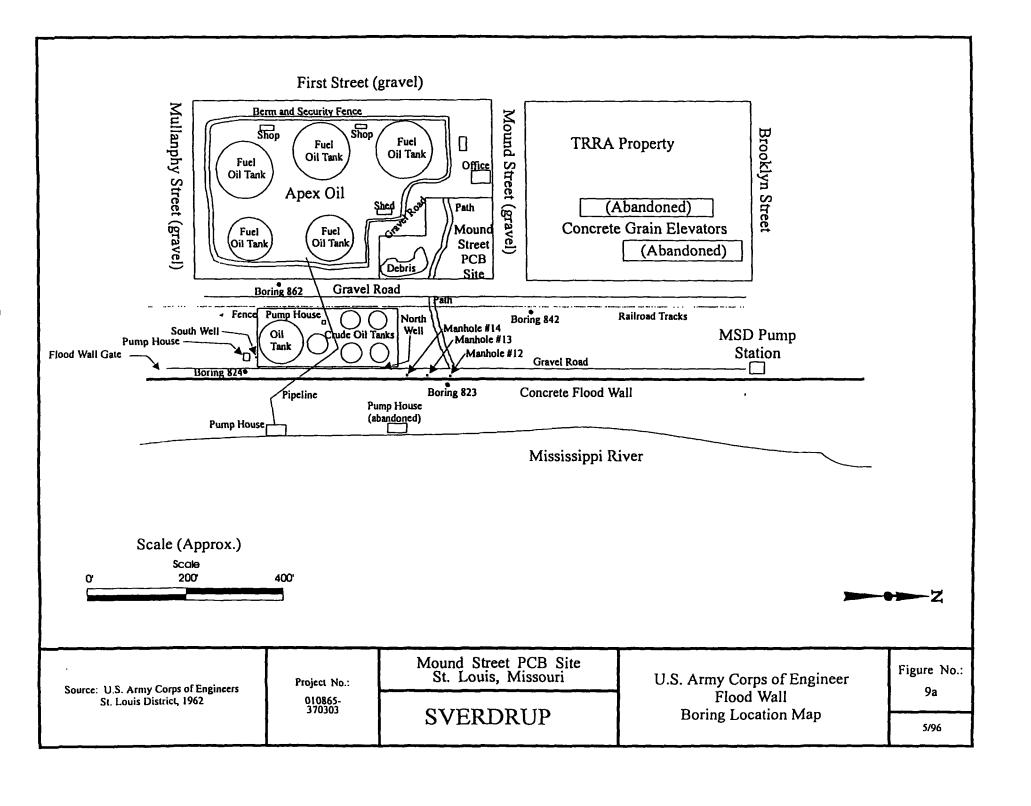
The results of this sampling indicate the presence of benzene and PAHs in the groundwater. Benzene was detected in the North Well at 38 μ g/L. However, benzene was not detected above the 6 μ g/L detection limit in the South Well. PAHs detected in the North Well sample were acenaphthene at 86 μ g/L, fluorene at 29 μ g/L, phenanthrene at 26 μ g/L, and bis(ethylhexyl) phthalate at 32 μ g/L. All analyzed compounds were nondetect in the South Well. PCBs were nondetect in both the North and South Well.

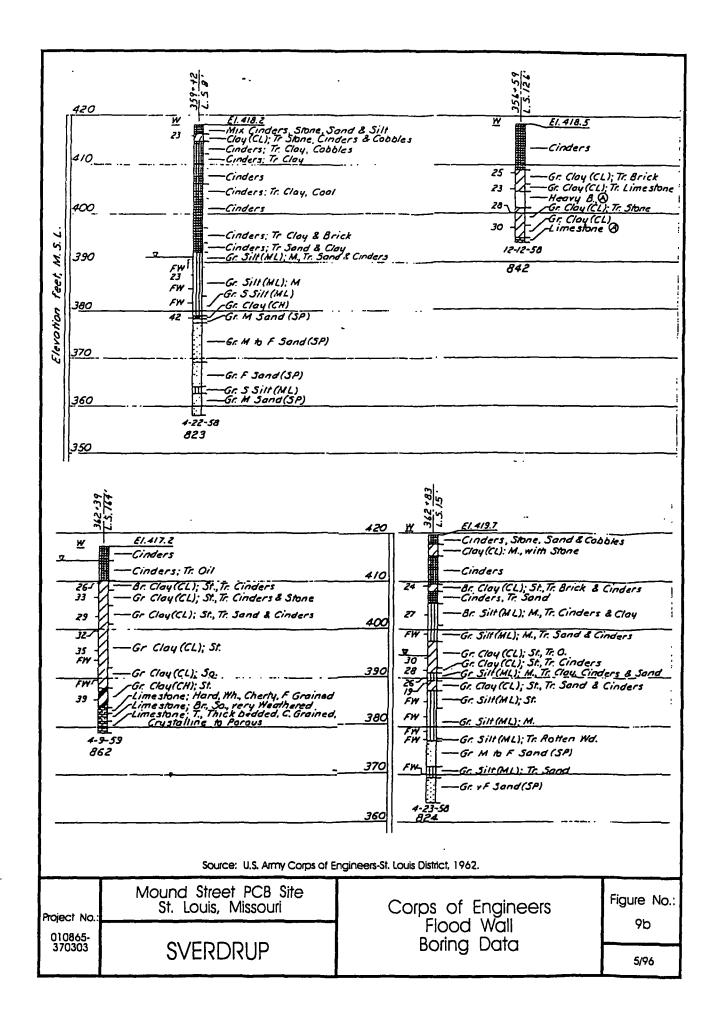
Groundwater data appears consistent with historical data obtained from the site. Groundwater samples collected in 1991 showed 65 ug/L acenapthalene, 25 ug/L fluorene, 46 ug/L phenanthene, 93 ug/L benzene and 1600 ug/L cyanide in Well 204 (North Well). Well 203 (South Well) sample analysis did not show any contamination except for 590 ug/L cyanide. Both cyanide results were "J" coded, reflecting that data did not strictly meet all QC criteria. Groundwater samples were collected in 1991 during an investigation of the Laclede Coal Gas Site. Volatiles, PAHs and cyanide were detected in the groundwater samples collected. Samples were not analyzed for PCBs. Refer to Table 1 and Figures 6a and 6b for sample data and locations.

4.3 GROUNDWATER USAGE AND TARGETS

Groundwater within a 4-mile radius of the site is not used for drinking water (References 4, 17 and 21). Irrigation of agricultural crops is possibly conducted via groundwater. The site is not located within a wellhead protection area (Reference 21).

The Mississippi River is located approximately 100 feet east of the sampled monitoring wells and the groundwater level fluctuates with the river level (Reference 3, 21 and 22). Therefore, the groundwater-to-surface water migration route is a potential exposure pathway.





5.0 SURFACE WATER PATHWAY

5.1 SURFACE WATER PATHWAY

The Mound Street PCB Site is located approximately 300 feet west of the Mississippi River and is protected from flooding by a concrete flood wall located approximately 200 feet east of the site. Average streamflow on the Mississippi River is greater than 100,000 cubic feet per second (Reference 15). The 15-mile downstream distance limit is shown in Figure 10. The concrete flood wall was built to withstand the 500-year flood, therefore, the site is outside the 500-year flood plain of the Mississippi River. Surface water runoff from the site is collected in the storm sewer system, which is connected to the sanitary sewer system. The sanitary sewer system flows to the Bissle Point Treatment Plant, approximately 2.5 miles upstream of the site (Reference 15). No channels or ditches were observed crossing the site property.

During the site reconnaissance conducted by E&E/FIT on November 20, 1990, seepage was observed from the foundation and pipe system of an abandoned pump house, formerly part of the Mound Street Power Plant. Since the pump house was on the river side of the flood wall, direct observation of a release to the surface water pathway was made. However, the source of the seepage was not known or determined, no sample was collected, and no description of the material seeping into the river was made. It is assumed to be an oil substance or mixture; however, there is no evidence of the oil being contaminated with PCBs.

5.2 SURFACE WATER SAMPLE RESULTS

No surface water or sediment samples were collected during this site investigation. Surface water and sediment samples have been collected near the Mound Street PCB Site. Sample analysis results are shown in Table 1. These samples were not analyzed for PCBs. A raw water sample was collected from the East St. Louis water intake of the Illinois-American Water Company, by E&E/FIT, during field activities conducted March 3-9, 1991. No contaminants were detected except for 12-14 ug/L chromium, 15-18 ug/L lead and 46-54 ug/L zinc. However, the sample was not tested for PCBs. The most recent raw water sampling for the Illinois-American water intake at East St. Louis was conducted in September, 1992 (Reference 19). Analysis results for March, 1992, and September, 1992, raw water samples are attached as Appendix D. No contaminants were detected above detection limits for semi-volatiles, pesticides, herbicides or PCBs (Reference 19). Subsurface soil samples and groundwater samples were collected for the surface water pathway (groundwater to surface water migration route). The results obtained from this activity are summarized in Tables 4 and 5 (Section 3.0). Complete analytical data reports are included in Appendix C.

Subsurface Soil

The soil sampling results for Sample DC1CY-102 indicate the presence of PAHs in the subsurface. Naphthalene was detected in Sample DC1CY-102 at 150 ug/kg, fluoranthene at 570 ug/kg, pyrene at 520 ug/kg, and carbon disulfide at 22 ug/kg. These results are less than the background levels identified during the 1991 SSI of the Laclede Coal Gas Site. Sample analysis showed levels of volatiles, semivolatiles and PCBs below the detection limits for the other sample locations (100, 100D, 103, and 104).

Subsurface soil samples were collected in 1991 during an investigation of the Laclede Coal Gas Site. Volatiles, PAHs and cyanide were detected. Samples were not analyzed for PCBs. Refer to Table 1 and Figures 6a and 6b for sample data and locations.

Groundwater

The results of this sampling indicate the presence of benzene and PAHs in the groundwater. Benzene was detected in the North Well at 38 μ g/L. However, benzene was not detected above the 6 μ g/L detection limit in the South Well. PAHs detected in the North Well sample were acenaphthene at 86 μ g/L, fluorene at 29 μ g/L, phenanthrene at 26 μ g/L, and bis(ethylhexyl) phthalate at 32 μ g/L. All analyzed compounds were nondetect in the South Well. PCBs were nondetect in both the North and South Well.

Groundwater samples were collected in 1991 during an investigation of the Laclede Coal Gas Site. Volatiles, PAHs and cyanide were detected in the groundwater samples collected. Samples were not analyzed for PCBs. Refer to Table 1 and Figures 6a and 6b for sample data and locations.

Surface Water

Samples collected during the 1991 investigation of the Laclede Coal Gas Site showed low concentrations of metals in the Mississippi River. Volatiles were not detected in the sediments; however PAHs, cyanide and metals were detected in the sediments. Samples were not analyzed for PCBs. Refer to Table 1 and Figures 6a and 6b for sample data and locations.

5.3 SURFACE WATER USAGE AND TARGETS

The Illinois American Water Company has a surface water intake at East St. Louis, located on the east side of the Mississippi River (Appendix A, Photo 12), less than one-tenth of a mile downstream from the subject site (References 3 and 21). The Illinois-American Water Company serves 19 communities with a combined service population of approximately 300,000 persons (References 15 and 17). The East St. Louis intake water is blended with an intake on Chouteau Island, approximately 10 miles upstream of the site. The East St. Louis intake provides approximately 60 percent of the required production (Reference 17). The likelihood of contaminants originating from the site entering the Illinois-American surface water intake is low for the following reasons:

The surface water intake is located across the Mississippi River from the site and slightly downstream. The intake is almost directly across the river from the site.

The Mississippi River has a flow of at least 100,000 cubic feet per second providing a dilution of 0.00001, per the Site Inspection Worksheets.

Contaminants would enter the river along the western edge of the river and progress outward in a plume. Such a plume would unlikely reach the eastern bank in such a short distance, rather contaminants would move directly south via the channel of the river.

No other surface water intakes are located within the 15-mile downstream target limit, except for industrial water usage intakes (Reference 15).

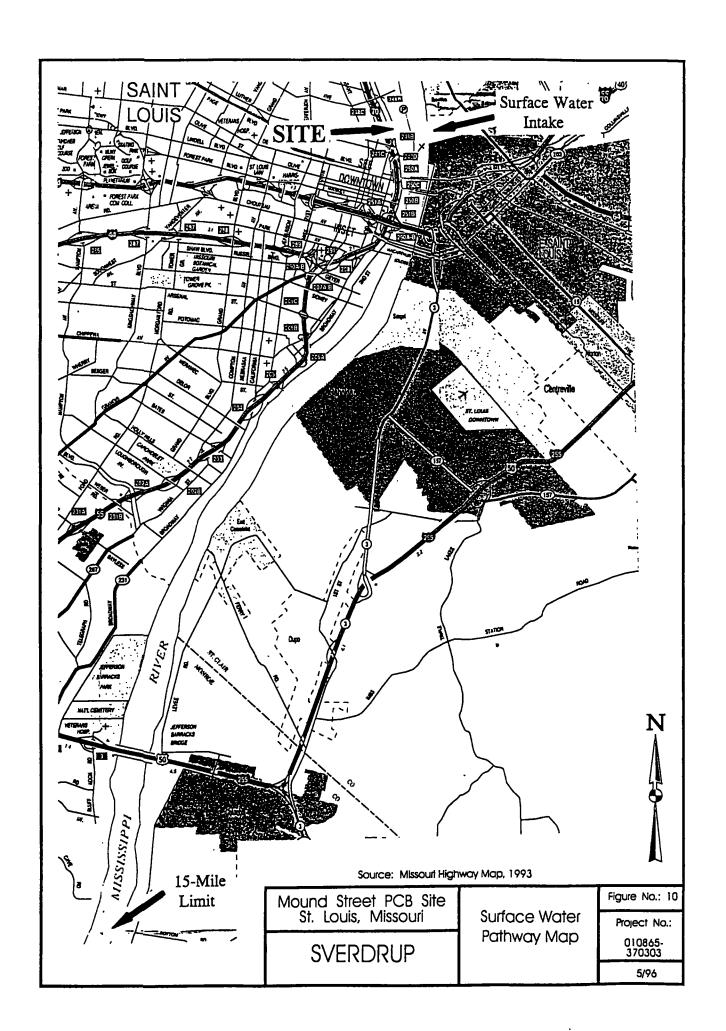
The Mississippi River (Appendix A, Photo 13) is a primary target with the following use designations; irrigation, livestock and wildlife watering, protection of warm water aquatic life and human health-fish consumption, boating and canoeing, drinking water supply, and industrial uses (Reference 16). It is also a primary fishery, with commercial and sport fishing occurring along the river. The commercial fish harvest by licensed fishermen in 1992 was reportedly 7,768 pounds for St. Louis County (Reference 18).

National Wetland Inventory Maps of the site area and 15 miles downstream along the Mississippi River were reviewed by MDNR during the completion of the PA. Approximately 0.7 miles of palustrine wetlands occur on the Illinois side of the river. No wetlands are reported on the Missouri side of the river (Reference 15).

State and federally listed and proposed threatened and endangered species which may occur in the vicinity of the site include the Pallid Sturgeon and Sicklefin Chub, big river fish that may have a wide range of occurance in the Mississippi River (Reference 2).

The Jefferson National Expansion Memorial, a 90-acre park with 2.7 million visitor per year (Reference 1), is located approximately 1 mile downstream of the site.

The Jefferson Barracks Park and National Cemetary are located approximately 15 miles downstream from the site (Reference 14).



6.0 SOIL EXPOSURE

6.1 PHYSICAL CONDITIONS

The Mound Street PCB Site is located in an industrial area near the Mississippi River. Fill material has been placed on the site to elevate it above the normal flood level (Reference 3). Fill near the site is approximately 12 deep and consists of demolition debris, including cinders, brick and cobble size stones (Reference 10). The former building basement was reportedly 12 - 14 feet below the ground surface and may have been filled with the building demolition debris (Reference 23). Beneath the fill is stratified native river alluvium. The area around the site is characterized as urban land, bottom land on 0 to 3 percent slopes. It is reported that these areas were originally bottom land or terrace land, and have been built-up with fill material (Reference 27). On the vacant property east of the site, native silt material was encountered to a depth of 27 feet (Reference 25).

Access to the site is unlimited, there are no fences or other barriers associated with this site. The site buildings were demolished in March of 1991 after an oil fire in the basement (Reference 3). The property is currently vacant with no structures present. Tall weeds were observed growing on the site during the December, 1995, site reconnaissance (Reference 23). No obvious erosional problems were observed during field activities (References 23 and 25).

6.2 SOIL SAMPLE RESULTS

Surface soil samples were collected in 1991 during an investigation of the Laclede Coal Gas Site. Volatiles, PAHs and cyanide were detected. Samples were not analyzed for PCBs. Refer to Table 1 and Figures 6a and 6b for sample data and locations.

6.3 SOIL EXPOSURE PATHWAY TARGETS

There are no residences on the site and the nearest residence is over one-quarter mile from the site (Reference 3). The nearest school is over one-half mile from the site (Reference 15). The surrounding area is commercial/industrial, with PFT-Apex Oil and TRRA being the closest facilities. Workers from each facility are in the vicinity of the site daily. However, they would not normally be physically on the Mound Street PCB Site, since it is a vacant lot and outside of their normal work areas (Reference 15).

Population within a 1-mile radius of the site is estimated at 3,755 persons on the Missouri side only (References 15). The population within a 4-mile radius of the site is approximately 207,100 persons (References 3). The following is an estimate of population in radial distance from the site, assuming the same density of people in each distance range:

Radial Distance	Percentage of Area		Population Range
0 - 0.25 mi	0.40		828
0.25 - 0.5 mi	1.17		2,423
0.5 - 1.0 mi	4.67		9,672
1.0 - 2.0 mi	18.76		38,852
2.0 - 3.0 mi	31.23		64,677
3.0 - 4.0 mi	43.76		90.627
		Total	207,100

The Jefferson National Expansion Memorial - Gateway Arch is approximately one mile downstream of the site. The National Park Service operates the park which encompasses 90 acres and has approximately 2.7 million visitors per year (Reference 1). No other sensitive environments occur within a 4-mile radius of the site (Reference 15).

7.0 AIR PATHWAY

Threats to the air pathway are evaluated as low because there have been no observed releases via the air pathway and there are few potential receptors. Air sampling was not conducted as part of this SSI. No air samples have been previously collected for this site.

8.0 SCREENING SITE INSPECTION SUMMARY

The Mound Street PCB Site is located in the City of St. Louis at the eastern end of Mound Street (near the intersection of Mound Street and First Street). The geographic coordinates of the site are 38° 38' 34.0" north latitude and 90° 10' 57.2" west longitude.

The Mound Street PCB Site is part of the Laclede Gas and Light Company former manufactured gas plant (FMGP) site, which operated in the late 1800s to the mid-1940s. On-site burial of coal tar wastes was typically conducted in unlined pits. In 1940, operations were split between Laclede Gas Light Company (Laclede Gas) and Laclede Power and Light Company (Laclede Electric). In 1945, Union Electric (UE) purchased the entire coal-gas facility and operated the Mound Street Power Plant from 1945 to 1973. UE did not manufacture coal-gas at this site. In 1969, the Apex Oil Company purchased the former coal gas works (Laclede Gas) from UE. UE, however, continued to operate its electrical facility from the former Laclede Electric works. In 1973, the UE property (Laclede Electric works) was transferred to the Tenlis Company. Tenlis dismantled the power generation and transmission equipment. Transformer oil was reportedly disposed by Midwest Oil Company. The dismantled equipment was sold as scrap metal. In 1981, Tenlis transferred the property to AZCON. The operations of AZCON are unknown; however, it was reported in the MDNR PA report that AZCON could have been a metal recycling company. In 1985, Mound Street Corporation became the property owner and leased the building to an individual for an electric motor stripping operation. An oil fire occurred in the basement of the building in 1989, and the building was demolished in the spring of 1991. McKinley Iron became the owner of the property in 1993.

The total area of the Mound Street PCB Site is estimated at approximately 1.5 acres. The property does not have any buildings or other structures, and is currently vacant.

Several investigations were conducted at this site over the last 20 years. Oil samples were collected on two different occasions from the former building basement. All PCB results have been below detection limits. Seepage was observed emanating from the foundation and piping system of an abandoned pump house, formerly part of the Mound Street Power Plant. The pipes were reportedly plugged with concrete; however, seepage was leaching through the concrete. The pump house is located on the eastern side of the flood wall, therefore, the seepage was going directly into the Mississippi River. No samples were collected and no description of the seepage material was made during the site reconnaissance. Soil, groundwater, surface water and sediment sampling conducted near the site identified the presence of volatile organics, PAHs and cyanide. The PAH and cyanide contamination was attributed to the former coal-gas operations. It was also stated that benzene, xylene, and some PAH contamination may be attributed to the adjacent PFT-Apex Facility.

Oil containing PCBs was discovered in July, 1993, at the Brooklyn Street storm-water pump station, located approximately 400 feet north of the Mound Street PCB Site. The possible source was identified as an underground storage tank (UST) on the adjacent property. The UST, removed in 1993, was located on Terminal Railroad Association (TRRA) property, southwest of the Brooklyn Street pump station. The TRRA property is located on the north side of Mound Street, directly across from the Mound Street PCB Site. In the conclusion of the Special Problem Investigation report completed by MSD, it is stated the UST appears to be the source of the oil in the pump station. It is further stated that ground saturation of oil from an old Union Electric facility is another possibility. No further incidences of oil in the Brooklyn Street pump station or manholes along the flood wall have occurred since the 1993 spill.

The Mound Street PCB Site is underlain by fill, Mississippi River alluvium, and limestone bedrock. Fill most likely consists of rock, brick, concrete, cinders, and other debris. Silt, clay or a mixture of silt and clay comprise the Mississippi River alluvium. No confining layer is known to exist between the alluvium and bedrock and no aquifer discontinuity exists within the 4-mile target distance limit. The depth to groundwater is approximately two feet above the Mississippi River and is estimated at 20 feet. Groundwater movement is toward the river, to the east and southeast of the site. The groundwater depth was measured at 25 feet below the ground surface during the field activities for this SSI. Groundwater samples from existing monitoring wells indicate the presence of benzene, cyanide and PAHs in the groundwater. The groundwater-to-surface water migration route is the pathway of most concern.

The Mound Street PCB Site is located approximately 300 feet west of the Mississippi River and is protected from flooding by a concrete flood wall located approximately 200 feet east of the site. Surface water runoff from the site is collected in the storm-sewer system, which is connected to the sanitary-sewer system. No channels or ditches were observed crossing the site property. Seepage was observed in 1990 leaking from the foundation and pipe system of an abandoned pump house, formerly part of the Mound Street Power Plant. Since the pump house is on the river side of the flood wall, direct observation of a release to the surface water pathway was made. Sampling of surface water and sediment indicate the presence of metals in the surface water, and the presence of xylene and PAHs in the sediment.

The Mound Street PCB Site is located in an industrial area near the Mississippi River. Access to the site is unlimited, there are no fences or other barriers associated with this site. The site buildings were demolished in March of 1991 after an oil fire in the basement. The property is currently vacant with no structures present. Tall weeds and other vegetation were observed growing on the site during the December, 1995, site reconnaissance. No obvious erosional problems were observed during field activities. Soil sampling indicate the presence of benzene, toluene, xylene and PAHs in the subsurface soil, and the presence of cyanide and PAHs in the surface soil. Health based screening concentrations for soils correspond to a 10⁶ individual cancer risk or a noncancer exposure level corresponding to a reference dose (RfD) under specific exposure assumptions. Based on the Laclede Coal Gas SSI sampling results, the cancer risk screen concentrations for benzo(a)pyrene (0.088 mg/kg), benzo(b)fluoranthene (0.88 mg/kg), benzo(a)anthracene (0.88 mg/kg), and ideno(1,2,3-cd)pyrene (0.88 mg/kg) have been exceeded. The RfDs for pyrene (2,300 mg/kg), cyanide (1,600 mg/kg), fluorene (3,100 mg/kg), acenaphthene (4,700 mg/kg), anthracene (23,000 mg/kg), and fluoranthene (3,100 mg/kg) have been exceeded.

Threats via the air exposure pathway are considered low due to the vegetative cover and low volatility of the chemicals of concern. No air samples have been collected.

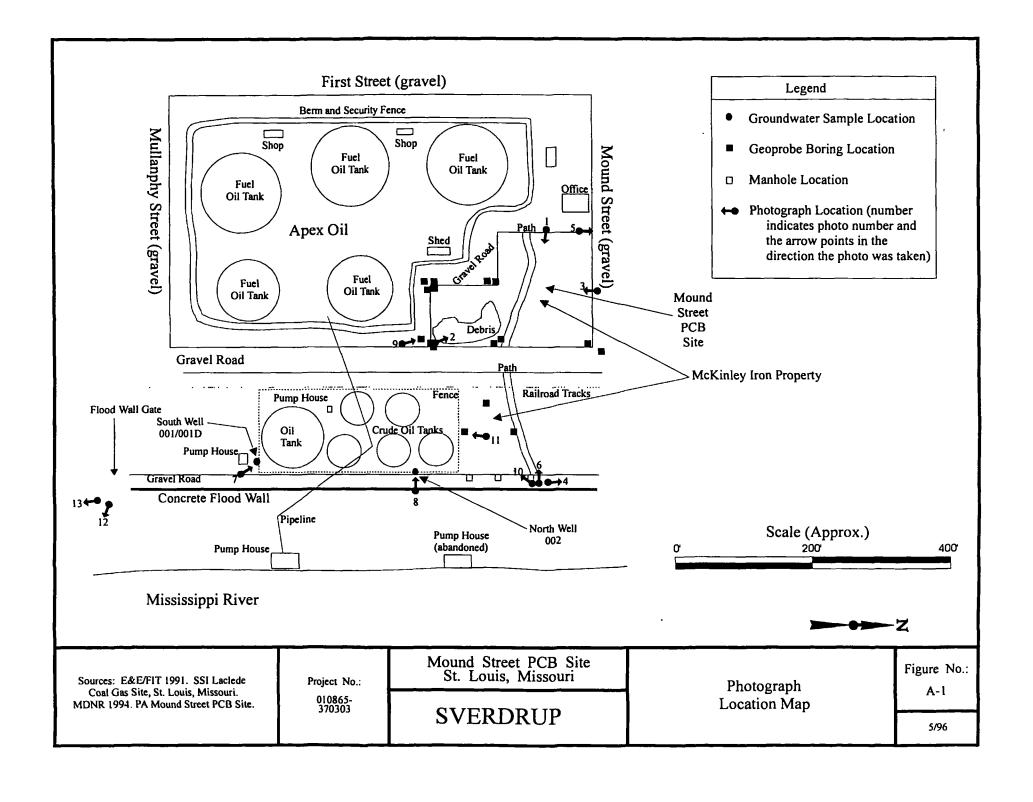
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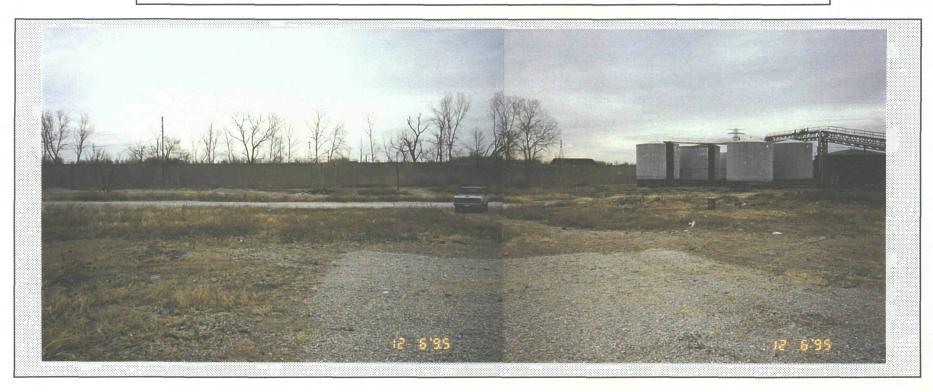
APPENDIX A PHOTOGRAPH RECORD



Site Name: Mound Street PCB Site Site Location: St. Louis, Missouri CERCLIS ID No.: MO0000093682

Sverdrup Project Reference No.: 010865-370303

Sverdrup



No. 1 (Roll 1, Photos 5 and 6)

Description: East view photomosaic of the site from the western border of the site. Note the PFT-Apex Oil tanks and flood wall in the background.

Photographer: M. McCurdy

Witness: K. Harris

Site Name: Mound Street PCB Site Site Location: St. Louis, Missouri CERCLIS ID No.: MO0000093682

Sverdrup Project Reference No.: 010865-370303

Sverdrup

No. 2 (Roll 1, Photo 1)

Description: Northwest view of the site from the southeast corner of the site. Note the debris piles in the background.

Photographer: M. McCurdy

Witness: K. Harris

Date: December 6, 1995

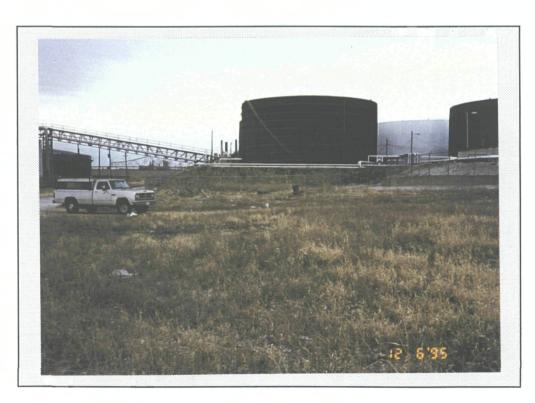


No. 3 (Roll 1, Photo 4)

Description: South view of the site from the northern edge showing vegetative cover. Note the PFT-Apex Oil tanks in the background.

Photographer: M. McCurdy

Witness: K. Harris



Site Name: Mound Street PCB Site Site Location: St. Louis, Missouri CERCLIS ID No.: MO0000093682

Sverdrup Project Reference No.: 010865-370303

Sverdrup

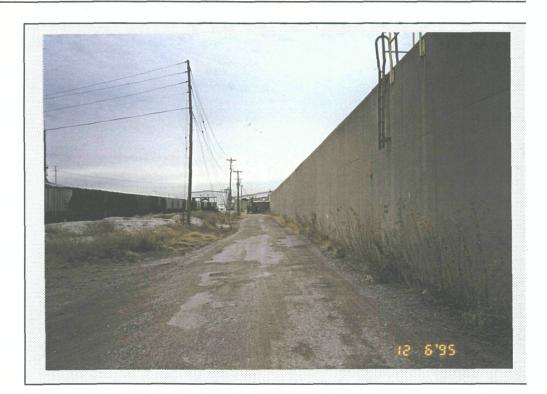
No. 4 (Roll 1, Photo 11)

Description: North view along gravel road and along flood wall showing the MSD pump station.

Photographer: M. McCurdy

Witness: K. Harris

Date: December 6, 1995

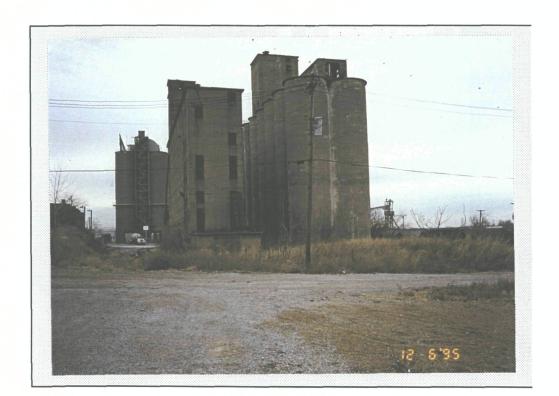


No. 5 (Roll 1, Photo 7)

Description: North view showing the TRRA property from which an UST was removed in 1993.

Photographer: M. McCurdy

Witness: K. Harris



Site Name: Mound Street PCB Site Site Location: St. Louis, Missouri CERCLIS ID No.: MO0000093682

Sverdrup Project Reference No.: 010865-370303

Sverdrup

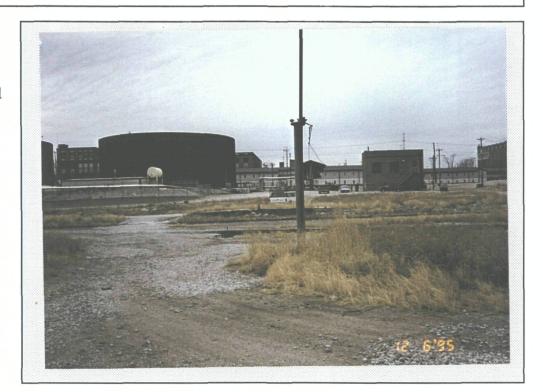
No. 6 (Roll 1, Photo 12)

Description: West view of the site from near the flood wall showing the site topography. Note the PFT-Apex Oil facility in the background

Photographer: M. McCurdy

Witness: K. Harris

Date: December 6, 1995



No. 7 (Roll 1, Photo 14)

Description: Northwest view showing the South Well.

Photographer: M. McCurdy

Witness: K. Harris



Site Name: Mound Street PCB Site Site Location: St. Louis, Missouri CERCLIS ID No.: MO0000093682

Sverdrup Project Reference No.: 010865-370303

Sverdrup

No. 8 (Roll 1, Photo 13)

Description: West view showing the north well on Petroleum, Fuel and Terminal property.

Photographer: M. McCurdy

Witness: K. Harris



Site Name: Mound Street PCB Site Site Location: St. Louis, Missouri CERCLIS ID No.: MO0000093682

Sverdrup Project Reference No.: 010865-370303

Sverdrup

No. 9 (Roll 2, Photo 2)

Description: Northwest view showing the location of soil sample DC1CY-101 at the southeast corner of the site. Note the debris piles in the background.

Photographer: M. May

Witness: M. McCurdy



Site Name: Mound Street PCB Site Site Location: St. Louis, Missouri CERCLIS ID No.: MO0000093682

Sverdrup Project Reference No.: 010865-370303

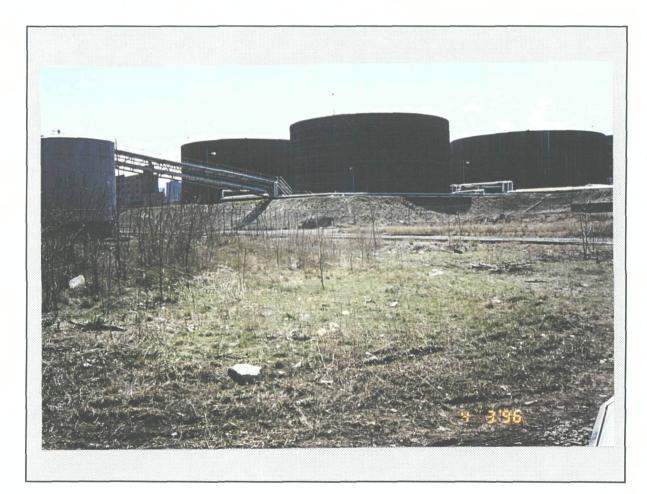
Sverdrup

No. 10 (Roll 2, Photo 21)

Description: Southwest view showing the vacant property where soil samples DC1CY-100/100D, 102, 103 and 104 were collected. This property is east of the site, near the flood wall.

Photographer: M. May

Witness: M. McCurdy



Site Name: Mound Street PCB Site Site Location: St. Louis, Missouri CERCLIS ID No.: MO0000093682

Sverdrup Project Reference No.: 010865-370303

Sverdrup

No. 11 (Roll 2, Photo 9)

Description: South view showing the location of sample DC1CY-100/100D near the PFT-Apex Oil tanks adjacent to the flood wall.

Photographer: M. May

Witness: M. McCurdy



Site Name: Mound Street PCB Site Site Location: St. Louis, Missouri CERCLIS ID No.: MO0000093682

Sverdrup Project Reference No.: 010865-370303

Sverdrup

No. 12 (Roll 2, Photo 24)

Description: East view across the Mississippi River showing the Illinois-American Surface Water Intake Pump House. Taken from the flood wall gate at Mullanphy Street.

Photographer: M. May

Witness: M. McCurdy



Site Name: Mound Street PCB Site Site Location: St. Louis, Missouri CERCLIS ID No.: MO0000093682

Sverdrup Project Reference No.: 010865-370303

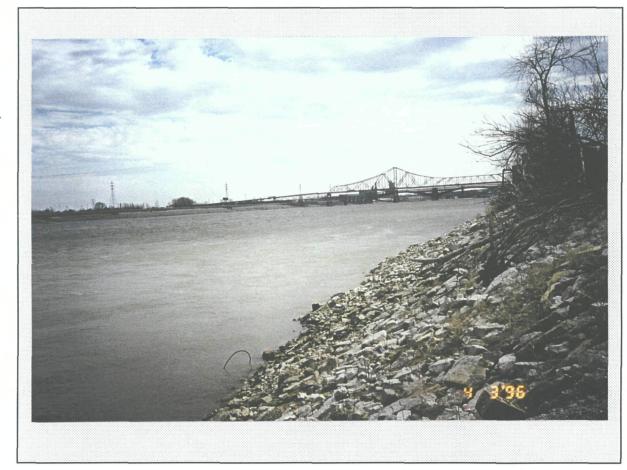
Sverdrup

No. 13 (Roll 2, Photo 23)

Description: South view showing the Mississippi River. Note the M.L. King Bridge and Eads Bridge in the background. The Illinois-American surface water intake pump house is off the picture to the left. Taken from the flood wall gate at Mullanphy Street.

Photographer: M. May

Witness: M. McCurdy



APPENDIX B

SAMPLE ANALYSIS RESULTS LACLEDE COAL GAS SITE 1991

SECTION 6: FIELD ACTIVITIES

Field work was conducted March 3 through 9, 1991. The sample series assigned to this activity was DSX44. The FIT members and their respective tasks were: Keith Brown, Team Leader; Anne Melia, FASP coordinator; Chris Williams, Geoprobe operator and sampler; Patty Roberts, Assistant Geoprobe operator and sampler; Wes McCall, drilling supervisor and Site Safety Officer; John Peck, sampler and health and safety monitor; and Jon Strobel, sampler and assistant FASP coordinator. The FIT contracted John Mathes & Associates, Inc. to conduct all subsurface drilling. On-site personnel for John Mathes & Associates, Inc. were: Keith Bunselmyer, driller; and Jeff Crank and Jim Burker, driller's assistants. Additionally, William Oberle and Jacalyn Wheeler, E & E/FIT, were present on site March 6 and 7, 1991, to conduct a health and safety, and technical field audits.

The primary chemical hazards associated with the Laclede Coal Gas site involve soils contaminated with cyanide salts and/or PAHs. These materials could pose inhalation, direct contact, and ingestion hazards. Samples were collected in level-D and level-C personal protection. An HNu photo-ionization detector with 10.2 eV probe was used to monitor ambient levels of volatile compounds in the breathing zone. If the HNu registered readings above predetermined action levels, personal protection was upgraded to level-C. Otherwise, samples were collected in level-D personal protection.

6.1 SUBSURFACE SOIL SAMPLING

Subsurface soil sampling was conducted March 4 through 9, in an attempt to determine the areal and vertical extent of subsurface contamination. Initially, 24 locations were drilled with solid stem augers (Figure 6-1; Table 6-1). Their depths ranged from 2 feet to 38 feet. Originally, the work plan called for 18 locations to be drilled with solid stem augers to approximately 20 foot depths, with the exception of 1 location which was to be drilled to 50 feet deep. This deep sample was intended to determine the depth to bedrock and help assess the vertical contaminant zone. The 6 additional locations were added because subsurface rubble prohibited the advancement of the augers

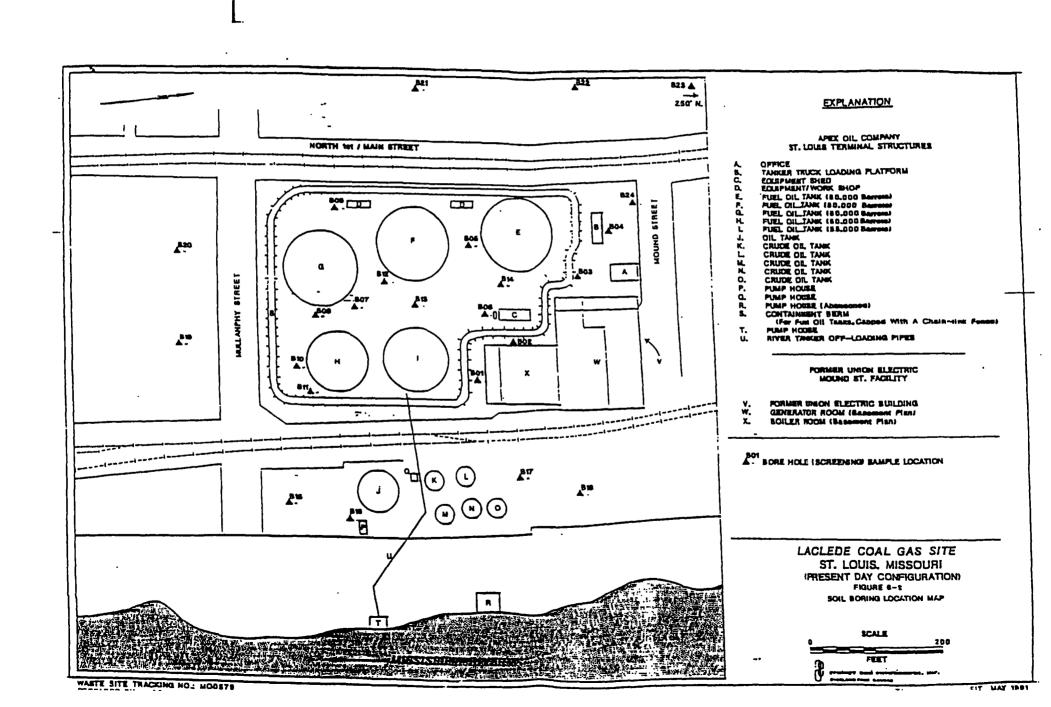


Table 6-1
Borehole Summary
Laclede Coal Gas
St. Louis, Missouri
Sample Series DSX44
March 1991

	:======================================	
Borehole #	Depth (ft)	Approximate Location
B01	18	South of former Mound Street Power Plant
BO2	21	Southwest of former Mound Street Power Plant
в03	19	South of P, F, & T Office
- B04	19	North of tanker truck loading platform
в05	26	Approximately 15 feet south of northern-most fuel
		oil tank
в06	38	North of center of site within containment berm
в07	29	South of center of site within containment berm
в08		Southwest corner of site within containment berm
в09		South of center of site within containment berm
B10	~~	Southeast corner of site within containment berm
B11	15	Southeast corner of site within containment berm
B12	11	Center of site within containment berm
B13	10	Center of site within containment berm
B14	26	North center of site within containment berm
B15	31	Southeast corner of site
B16		Southeast corner of site approximately 100 feet
		north of B15
B17	33	Northeast corner of site
в18	33	Northeast corner of site approximately 150 north
		of B17
в19	30	South of Mullanphy Street
в20	30	South of Mullanphy Street approximately 200 feet
		north of B19
B21		Approximately 80 feet north of North 1st Street
B22		Approximately 300 feet north of B21
B23		Approximately 450 feet north of B22
B24	23	Northeast corner of site

Note: See Figure 6-1 for borehole locations.

at several locations to only a few feet and, therefore, a representative sample could not be collected.

Samples were collected off the auger flights and screened on site for PAHs and VOCs in the FASP mobile laboratory (Tables 6-2 and 6-3). The samples were collected at 5 foot intervals: the PAH sample was a composite of 5 aliquots, 1 collected every foot; the VOC sample was a grab sample. Four of the sample locations determined by FASP analysis to be the most contaminated were resampled as follows: hollow stem augers equipped with continuous samplers were advanced, offset 1 to 5 feet from the screening boring (Figure 6-2, Table 6-4). A background location was sampled in the same manner. Due to subsurface rubble and debris, the continuous sampler could not be utilized at all locations. A split spoon sampler equipped with a 140 pound hammer was used at locations where the continuous sampler would not work. Samples were collected according to E & E, Inc. Standard Operation Procedures (SOPs) for borehole sampling, Gentech 5.9. Samples from the 4 locations that were resampled were submitted to EPA for volatiles, semi-volatiles, cyanides, and total metals analysis.

The background samples were inadvertently discarded along with the screening samples. This was not discovered by FIT until the SSI was completed and the team had returned to Kansas City. Split samples had been collected at all locations where samples were submitted to the EPA and which were also on PF & T property. Kathy Enright, of E & E/TAT in St. Louis, Missouri, sent the split samples collected for PF & T to E & E's Kansas City office. These samples were once again split, and 1 set was submitted to EPA to be used as the background sample. The other set was returned to PF & T.

The background samples were collected at a different location than stated in the work plan because bedrock was encountered at approximately 2 feet below the surface at this location; therefore, subsurface soil samples could not be collected there. FASP analysis had revealed that borehole #B24, the farthest upgradient screening sample, was below detection limits for all target compounds. It was known that the depth to bedrock was approximately 20 feet. Therefore, E & E/FIT relocated

Table 6-2
FASP Screening Results for Volatiles
LaClede Coal Gas
St. Louis, Missouri
Sample Series DSX44
March 1991

	Benzene	Toluene	M-xylene	Donah (form)
Sample #	(µg/kg)	(µg/kg)	(µg/kg)	Depth (feet)
B01 A	1,200	380	1,700	0 - 5
1 BO1 B	9,100	1,200	19,000	´ ` 5 - 10
B01 C	18,000	710	65,000	10 - 15
B01 D	17,000	770	79,000	15 - 18
BO2 A	6,300	43,000	240,000	0 - 5
BO2 B	6,100	1,700	57,000	5 - 10
BO2 C	69,000	110,000	570,000	10 - 15
BO2 D	7,500	650	33,000	15 - 21
BO3 A	1,040	22,000	22,000	0 - 5
BO3 B	310	11,000	53,000	5 - 10
BO3 C	1,800	6,300	3,500	10 - 15
BO3 D	860	9,000	5,300	15 - 19
B04 A	< 250	450	5,600	0 - 5
B04 B	310	480	5,900	5 ~ 10
B04 C	< 250	250	5,100	10 - 15
B04_D	< 250	ND	440	15 ~ 19
B05 A	460	ND	ND	0 - 5
B05 B	ND	ND	ND	5 - 10
B05 C	ИД	ND	420	10 - 15
BO5 D	ND	ND	410	15 - 20
B05 E	ND 40 000	ND	ND	20 - 26
,7806 A	48,000	1,700	120,000	0 - 5
BO6 B BO6 BA	20,000	1,800 120,000	68,000	8 - 10 0 - 5
B06 BB	27,000	91,000	220,000 260,000	0 - 5
BOG BC	27,000 ND	91,000 ND	200,000 ND	10 - 15
B06 BD	< 250	< 250	ND	15 - 20
BOG BE	12,000	14,000	54,000	20 - 25
BO6 BF	43,000	66,000	23,000	25 - 30
BO6 BG	20,000	16,000	26,000	30 - 35
ВО6 ВН	29,000	43,000	94,000	35 - 38
B07 A	1,000,000	17,000	2,500,000	3 - 8
BO7 B	670,000	12,000	2,100,000	8 - 13
B07 C	370,000	ND	> 1,200,000	13 - 18
BO7 D	140,000	2,500	> 21,000,000	18 - 23
BO7 E	22,000	490	120,000	23 - 26
B07 F	51,000	2,800	340,000	26 - 29
B10 B	< 250	410	ND	5 - 10
B11 A	ND	ND	ND	0 - 5
		Ì		
	<u> </u>	1	<u> </u>	<u> </u>

Table 6-2 (cont.)

Sample # B11 B B11 C	Benzene (µg/kg) ND	Toluene (µg/kg)	M-xylene (µg/kg)	Depth (feet)
B11 B			1,0,0,0	
T T	ND			
B11 C		ND	ND	5 - 10
	ND	ND	ND	10 - 15
B12 A	< 250	< 250	1,500	0 - 5
B12 B	910	1,600	4,400	5 - 11
B13 A	570	420	< 250	0 - 5
B13 B	670	450	2,300	5 - 10
B14 A	270,000	11,000	> 160,000	2 - 8
B14 B	790	9,100	> 24,000	8 - 13
B14 C	400,000	14,000	> 160,000	13 - 18
B14 D	340,000	12,000	> 210,000	18 - 23
B14 E	310,000	8,900	> 195,000	23 - 26
	2,200,000	63,000	> 1,000,000	23 - 20
B14 SS	93,000	110,000	440,000	
B15 A	680	490		
B15 B	290	ND	> 29,000	0 - 5
B15 C	< 250	ND	10,000	5 - 10
B15 D	< 250	ND	7,400	10 - 15
B15 E	ND ND		2,700	15 - 20
B15 F		ND	ND	20 - 25
B16 A	ND 820	ND	ND 15 000	25 - 31
B17 A	540	860	15,000	0 - 3
B17 B	סא מא	ND	21,000	0 - 5
/ B17 C	ND ND	ND	2,700	5 - 10
B17 D	ND	ND	ND	10 - 15
B17 E		ND	ND	15 - 20
B17 F	ND ND	ND	ND	20 - 25
B17 G	ND	ND	ND	25 - 30
B18 A	< 250	DИ	ND	30 - 33
B18 B		ND	ND	0 - 5
B18 C	ND	ND	ND	5 - 10
	ND	ND	ND	10 - 15
	ND	ND	ND	15 - 20
B18 E	ИD	ND	ND	20 - 25
B18 F	ND	ND	ND	25 - 30
B18 G	ND	ND	ND	30 - 33
B19 A	ND	ND	ND	0 - 5
B19 B	ND	ND	ND	5 - 10
B19 C	ND	DN	ND	10 - 15
B19 D	ND	ND	ND	15 - 20
B19 E	ND	ND	ND	20 - 25
B19 F	ND	ND	ND	25 - 30
B20 A	320	ND	ND	0 - 5
B20 B	ND	ND	ND	5 - 10
B20 C	ND	ND	ND	10 - 15
B20 D	ND	ND	DN	15 - 20
[1
	<u></u>			<u> </u>

Table 6-2 (cont.)

Sample #	Benzene (µg/kg)	Toluene (μg/kg)	M-xylene (µg/kg)	Depth (feet)
B20 E	ND	ND	ND	20 - 25
B20 F	ND	ND	ND	25 - 30
B22 A	ND	ND	ND	
\ <u>^ B</u> 23 A	ND	ND	ND	0 - 4
B24 A	ND	ND	ND	0 - 5
B24 B	ND	ND	ND	' ' 5 - 10
B24 C	< 250	ND	ND) 10 - 15
B24 D	400	ND	550	15 20
B24 E	460	ND	430	20 - 23
401	ND	ND	ND	A/N
402	ND	ND	1,600	N/A
403	< 250	₹ 250	420	N/A
301	ND	מא	מא	N/A
<u>1</u> 302	ND	ND	ND	N/A
303	ND	ND	ND	N/A
304 į	ND	į ND	DИ	N/A
DW 1	188	77	1,000	N/A
DW 2	330	48	1,100	N/A
CDW	ND	ND	ND	N/A
SS-Rin-	ND	ND	ND	N/A
sate		1		
		<u> </u>		

Note: Detection limit for soil/sediment samples = 250 μ g/kg. Detection limit for water samples = 25 μ g/L. See Figures 6-1 and 6-2 for sample locations.

BO1 A through B24 E = soil samples

401 through 403 = sediment samples

301 through 304 = surface water samples

DW = decon water (units are µg/L)

CDW = clean decon water

ND = no detection

N/A = not applicable

SS = split spoon

Table 6-3 FASP Screening Results for PAHs LaClede Coal Gas St. Louis, Missouri Sample Series DSX44 March 1991 Reported in µg/kg

Sample	Fluor-		Benzo(k)	Benzo(a)	
#	anthene	Pyrene	fluoranthene	pyrene	Comments
/ BO1 A	16,000	3,700	NA	NA	1 1
B01 B	27,000	12,000	NA	NA	
: BO1 C	56,000	40,000	NA	NA	
B01 D	13,000	5,200	NA	NA	
BO2 A	8,000	ND	ND	ND	
BO2 B	15,000	ND	ND	ND	_
B02 C	ND	מא	ND	ND	·
BO2 D	ND	ND	ND	ND	
BO3 A	ND	ND	ND	ND	
BO3 B	ND	סא	ND	ND	
B03 C	ND	ND	ND	ND	
B03 D	ND	מא	ND	ND	
B04 A	ND	ND	ND	ND	
BO4 B	12,000	ND	ND	ND	
B04 C	9,000	ND	ND	ND	
B04 D	< 500	ND	ND	ND	chyrsene & benzo(a)
					anthracene = 1,200
BO5 A	ND	ND	ND	ND	
BO5 B	ND	ND	ND	ND	
B05 C	ND	ND	ND	ND	
B05 D	ND	ND	ND	ND	two unknown peaks
_B05 E	ND FF 000	ND	ND F (000	ND	
B06 A	55,000	110,000	54,000	40,000	anaphthalene, fluorene,
в06 в	Rla	l wout GC nea	l aks too large t	l O intograto	anthracene, chrysene
BOG BA	ND	l ND	ND	ND	1
: B06 BB	ND	ND	ND ND	ND	
: BO6 BC	ND	ND	32,000	11,000	other identified peaks
B06 BD	ND	ND	ND .	ND ND	other identified peaks
BO6 BE	ND	ND	I ND	ND	
BO6 BF	ND	ND	ND	ND	1
BO6 BG	ND	ND	ND	ND	
BO6 BH	17,000	ND	ND	ND	
B07 A		too large to	•	time to re	analyze
BO7 B	160,000	50,000	50,000	70,000	other PAHs present
B07 C	130,000	130,000	33,000	76,000	other PAHs present
B07 D	12,000	9,600	3,700	3,900	
B07 E	3,300	3,800	3,500	3,000	other PAHs present
B07 F	20,000	19,000	4,200	8,000	other PAHs present
B10 B	14,000	16,000	7,800	9,100	other PAHs present
			1		
		<u></u>		<u> </u>	1
			6.8		

6-8

Table 6-3 (cont.)

					 	···		
	B11	A	2,400	1,600	4,200	ND	other	PAHs present
	B11	В	?,100	2,100	7,000	10,000	other	PAHs present
	B11	C	7,800	ND	6,000	12,000	1	rano present
	B12	A	14,000	12,000	14,000	15,000	į	
	B12	В	38,000	29,000	12,000	15,000	i	
	B13	Α	150,000	73,000	46,000	44,000	1	
	B13	В	12,000	10,000	10,000	12,000	į	
	B13	C	32,000	34,000	28,000	32,000	j	
	B14	A .	1,600,000	580,000	280,000	63,000	other	identified peak
	B14	В	2,200,000	1,000,000	370,000	310,000	other	identified peak
ļ	B14	С	4,200,000	1,600,000	1,200,000		other	identified peak
ì	B14	D	4,300,000	1,300,000	490,000	i	other	identified peak
	B14	E	3,200,000	4,100,000	1,500,000	140,000	other	identified peak
	B14	F	Ble	out GC, pea		integrate	, , , , , , ,	- rear
	B14	SS		880,000	230,000	130,000	l	
_	B15		ND	ND	DN	ND	ĺ	
	B15		4,900	1,300	ND	ND	1	
	B15	С	ND	DИ	ND	ND	i	
	B15		ND	ND	ND	ND		
	B15	Ε	סא	מא	ND	DИ	i	
	B15	F	ND	ND	ND	ND	•	
	B16	A	19,000	30,000	ND	ND	early	peaks
_	B17	Α	ND	ND	ND	ND		peaks
Í	B17	В	ND	ND	ND	ND	1	
•	B17	С	ND	< 500	ND	ND		
	B17	D	ND	ND ND	ND	סא	ì	
	B17	E	סא	מא ו	ND	ND	[
	<u>B</u> 17	F	ND	l nd	ND	ND	}	
	B18	Α	ND	ND	ИD	ND	į	
i	B18	В	ND	ND	ND	ND		
}	B18	С	ND	ND ND	ND	ND	į	
:	B18	D	ND	ND	ND	DN	İ	
•	B18	E	ND	ĺ ND	ND	ND	ĺ	
	B18	F	ND	ND ND	ND	ND	i	
	B18		ND	ND ND	ND	ND	Ì	
	B19		םא	םא ו	ND	ND	į	
	B19		ND	ND	DND	מא	i	
	B19		ДИ	l пр	ND	ND	Í	
	B19		ם א	ND	מא	ND	i	
	B19		18,000	16,000	14,000	12,000	İ	
	B19		4,500	ND	2,800	ND	İ	
	B20		ND	2,900	< 500	ND	İ	
	B20		4,100	4,000	סא	545	į	
	B20		ND	ND	מא	DИD	j	
	B20		ND	ND	סא	ND		
	B20		ND ND	ND	ND	ם מא	! 	
	B20	F	2,600	3,200	3,500	4,500	}	
	B22	A	3,800	3,500	2,800	ND	! 	
			j	j]2	j	
	_		[i	! 	
					6.0		L	

6-9

Table 6-3 (cont.)

B23 A	ND	ND	ND	ND	
_501					peaks close to reten-
}	1	}		Ì	tion time, but do not
_	Ţ	ļ			match
402	ND	ND	ND	סא	
403	2,600	5,400	4,200	3,800	1
DDW	ND	ND	ND	MD	no peaks (µg/L)
SS Rin	מא	סא	ND	ND	no peaks (µg/L)
sate		ļ		ļ	
B24 A	ND	ND	ND	ND	
B24 B	ND	ND	ND	ND	İ
B24 C	ND	ND	ND	ΝD	į
B24 D	ND	ND	ND	ND	
B24 E	ИD	ND	ND	ND	
i		j		İ	
į		j			

Note: Sample locations are shown on Figures 6-1 and 6-2. Sample 501 is an oil sample collected from tank #7, shown on Figure 6-2. Detection limits for soil/sediment = $500 \mu g/kg$. Detection limits for water samples = $15 \mu g/l$.

DDW = dirty decon water

SS = split spoon

NA = not analyzed

ND = not detected

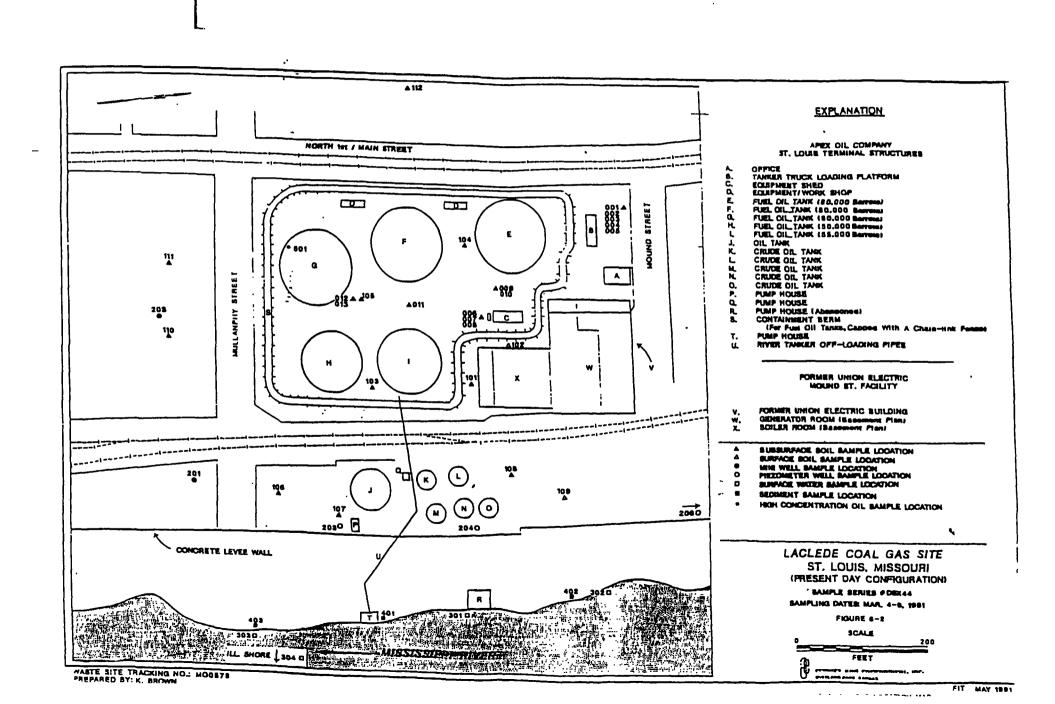


Table 6-4
CLP Soil/Sediment Sample Summary
LaClede Coal Gas
St. Louis, Missouri
Sample Series DSX44
March 1991

Sample #	Depth (feet)	Location Description
001	3 - 7	5 feet northwest of B24
002	7 - 11	5 feet northwest of B24
003	11 - 15	5 feet northwest of B24
004	15 - 19	5 feet northwest of B24
005	19 - 23	5 feet northwest of B24
006	3 – 8	2.5 feet north of BO6
007	8 - 13	2.5 feet north of BO6
008	8 - 12	2 feet south of BO6
009	4 – 8	3 feet northwest of B14
010	12 - 14	3 feet northwest of B14
011	11 - 17	1.5 feet west of BO7
012	5 - 11	1 foot north of B13
013	11 - 12.5	1 foot north of B13
101	0 - 2	B01
102	0 - 2	ВО2
103	0 - 2	South central tank farm
104	0 - 2	В05
105	0 – 2	В07
106	0 - 2	B15
107	0 – 2	B16
108	0 - 2	B17
109	0 – 2	B18
110	0 – 2	B19
111	0 – 2	B20
112	0 - 2	B21
401	N/A	150 feet south of southeast corner
		of the abandoned pump house
401D	N/A	150 feet south of southeast corner
		of the abandoned pump house
402	N/A	110 feet north of northeast corner
		of the abandoned pump house
403	N/A	330 feet south of southeast corner
		of the abandoned pump house

Note: Samples 001 through 013 collected from five aliquots, except VOCs were grab samples. Samples 101 through 112 collected from two aliquots. All samples were submitted to EPA for cyanide, semi-volatiles, and total metals analyses. Samples 001 through 113 and 401 through 403 were also analyzed for volatiles. Samples 401 through 403 were also analyzed for total petroleum hydrocarbons. See Figure 6-2 for sample locations.

D = Duplicate

N/A = Not applicable

the background sample location to the farthest northwest corner of PF & T property. This location is approximately 60 feet northwest (upgradient) of borehole #BO4 (Figure 6-1).

6.2 SURFACE SOIL SAMPLING

Surface soil sampling was conducted March 4 through 7, to determine whether contamination was present in the 0- to 2-foot interval. Twelve samples were collected (Figure 6-2, Table 6-4). According to the work plan, these samples were to be collected using a power auger. However, due to excessive amounts of gravel and rubble present, the power auger could not be used efficiently. Therefore, all but one surface soil sample was collected with the subcontractor's drill rig.

Each sample was collected off the auger flights and consisted of two aliquots collected from one- and two-foot depths. The sample not collected with the drill rig was obtained with the use of the power auger. Three of the 12 surface soil samples collected, 110, 111, and 112, were inadvertently discarded along with the screening samples. Keith Brown and Scott Hayes returned to the site on March 13 and 14 and recollected these samples with a power auger. All samples were submitted to EPA for semi-volatile, cyanide, and total metals analyses. Samples were collected in accordance with the Region VII E & E/FIT SOP for soil sample collection, Geotech 5.17.

6.3 GROUND WATER SAMPLING

Ground water sampling was conducted March 5 through 9, to determine whether any coal tar wastes present have leached into the shallow ground water or migrated off site via the ground water. A total of 9 samples, including a duplicate, field blank, rinsate, and extra volume sample were collected (Figure 6-2, Table 6-5). The work plan called for the installation of 4 temporary mini-wells with the Geoprobe. Due to subsurface rubble, only 2 mini-wells were installed. However, the Corps of Engineers (COE) has installed piezometer wells along the west side of the Mississippi River levee wall. The COE wells located just east of the site were sampled with the use of the Geoprobe vacuum system. One other COE piezometer well was sampled; it is located approximately 1,500 feet north (upgradient) of the site along the levee wall. This location

Table 6-5
Water Sampling Summary
LaClede Coal Gas
St. Louis, Missouri
Sample Series DSX44
March 1991

		Static Vater	·
Sample	Depth (feet)	Level (SWL) (feet)	Location/Description
201	26	24	64 feet south from center of Mullanphy Street and 50 feet east of easternmost railroad
202	33	24	147 feet west of easternmost railroad and 78 feet south of center of Mullanphy Street
203	47.25	27.25	147 feet north of center of Mullanphy Street and 40 feet west of levee wall
204	48	26	363 feet north of center of Mullanphy Street and 25 feet west of levee wall
205F	N/A	N/A	Rinsate of augers and split spoon sampler
206	52	29	2,118 feet north of center of Mullanphy Street and 20 feet west of levee wall
206D			Duplicate of 206
207F	N/A	N/A	Field Blank
208	N/A	N/A	Geoprobe pipe rinsate sample
209F	N/A	N/A	Trip blank
301	Surface	N/A	Southeast corner of abandoned pump house
301D	Duplicat	te of above	
302	Surface	N/A	170 feet north of northeast corner of abandoned pump house
303	Surface	N/A	330 feet south of southeast corner of abandoned pump house
304	Surface	N/A	Illinois American drinking water intake in East St. Louis
304D			Duplicate of 304
501	Surface	N/A	Oil sample collected from PF & T tank #80-1

Note: See legend on next page.

Legend for Table 6-5

Note: Sample locations are shown on Figure 6-2. All water samples were submitted to EPA for volatiles, semi-volatiles, and total and dissolved metals analyses. Samples 301 through 304D were also analyzed for Total Petroleum Hydrocarbons. Sample #501 is an oil sample which was submitted to EPA for Total Petroleum Hydrocarbons, volatiles, and semi-volatiles analyses. Cyanide samples were preserved with sodium hydroxide. Metals samples were preserved with nitric acid.

D = duplicate

F = field blank or trip blank

N/A = not applicable

was chosen for the ground vater background sample. The original background location could not be sampled because bedrock was only 2 feet
deep. All samples were collected following the E & E Region VII SOP for
ground water collection, Gentech 5.11. Total and dissolved metals
samples were preserved with nitric acid; cyanide samples were preserved
with sodium hydroxide; and all samples were stored on ice. Samples were
delivered to EPA for volatiles, semi-volatiles, cyanide, total metals,
and dissolved metals analyses. The field parameters, temperature, pH,
and conductivity were measured and recorded in the field (Table 6-6).

6.4 SURFACE VATER/SEDIMENT SAMPLING

Surface water/sediment sampling was conducted March 6 through 7 to determine whether contaminants have migrated via the ground water/surface water interface. A total of 6 surface water samples were collected, including 2 duplicates (Figure 6-2, Table 6-5). All samples were collected according to the EPA Region VII SOP for surface water sample collection, 2334.7A. Samples were submitted to EPA for Total Petroleum Hydrocarbons, volatiles, semi-volatiles, cyanide, total metals, and dissolved metals analyses. Total and dissolved metals samples were preserved with nitric acid, cyanide samples were preserved with sodium hydroxide, and all samples were stored on ice. The field parameters temperature, pH, and conductivity, were measured and recorded in the field (Table 6-6).

A total of 4 sediment samples were collected, including a duplicate (Figure 6-2, Table 6-4). All samples were collected according to the EPA Region VII SOP for sediment sample collection, 2334.8A. Samples were submitted to EPA for Total Petroleum Hydrocarbons, volatiles, semi-volatiles, cyanide, and total metals analyses. Surface water and sediment samples were screened on site in the mobile lab for the presence of PAHs and VOCs (Tables 6-2 and 6-3).

6.5 PRODUCT SAMPLING

One oil sample was to be collected from the basement of the former Mound Street Power Plant, if the building was standing and oil was present in the basement. At the time of the SSI, the building was in the process of being razed. Due to the danger involved with entering

Table 6-6
Field Parameters for Water Samples
LaClede Coal Gas
St. Louis, Missouri
Sample Series DSX44
March 1991

March 1991											
Sample #	Temperature (C°)	рН	Conductivity (umhos)								
301	7	8.15	440								
3010	7	8.15	440								
302	6	7.87	450								
303	6	7.27	360								
304	3	7.05	350								
304D	3	7.05	350								
201	11	7.58	1,500								
202	7	7.81	2,000								
203	9	6.32	1,500								
204	9	6.21	1,400								
206	11	6.14	1,600								
206D	11	6.14	1,600								
207F											
208	4	7.00	16								
209F											

Note: See Figure 6-2 for sample locations.

this building, the sample was not collected. However, an oil sample (sample 501) was collected from an 80,000-gallon tank on site (Figure 6-2). This tank contained #6 oil, the same type of oil that was spilled in 1986 and entered the basement of the former power plant. This oil sample was submitted to EPA for total petroleum hydrocarbons, VOCs, and semi-volatiles analyses. It was also screened on site in the mobile lab. The chromatogram peaks were close to the retention times for the contaminants being screened, but did not match (Table 6-3).

SECTION 7: ANALYTICAL RESULTS

7.1 SURPACE SOIL SAMPLES (0-2 FEET)

The surface soil (0-2 feet) sampling data indicated that the majority of the 7-acre site is significantly contaminated with cyanide at greater than three times the detection limit of the background sample 112 (Figure 6-2; Table 7-1). Analysis of off site samples 110, 111, and 112 revealed no cyanide contamination over their detection limits of 6.2, 6.2, and 6.7, respectively (Figure 6-2).

Surface soil PAH contamination was less extensive than the surface soil cyanide contamination. Four out of the 12 samples collected contained a total PAH content greater than five times the concentration of the background sample. These were samples 104, 105, 107 and 109 (Figure 6-2; Table 7-1).

The cyanide contamination found on site can be attributed to the FMGP based on the fact that cyanide is an oxide waste produced during the gas purification process (see Section 4 for details). There should not be any attribution from current on site activities, because cyanide is not a constituent normally found in oil or asphalt.

Attribution of PAH contamination in the surface soil samples is difficult to assess. The oil sample data indicated significant concentrations of many PAH compounds (Appendix D, Sample 501). PF & T currently stores #6 oil and asphalt on site in very large quantities. In 1986, PF & T experienced a spill of said oil which covered most of the site. Thus, surface soil PAH contamination could be attributed to PF & T activities or to the FMGP, based on the fact that it was common practice for FMGPs to bury tar and purifier waste on site. PAHs are a major constituent of coal tar waste.

7.2 SUBSURFACE SOIL SAMPLES

FASP screening results indicated that the highest PAH contamination zone was located in the central portion of the tank farm currently on site (Figure 6-1; Tables 6-2 and 6-3). The approved work plan allowed E & E/FIT to collect CLP subsurface soil samples at four locations. A total of eight samples (006-013) were collected at depths ranging from 3

Table 7-1
PAHs and Cyanide In Surface Soils
Laclede Coal Gas Site
St. Louis, Missouri
E & E/PIT; March 1991
Sample Series DSX44
(mg/kg)

Compound	101	102	103	104	105	106	107	108	109	110	111	112*
Napthalene							60	1.1	0.51			0.41U
2-Methylnaphthalene							13	2.5				0.41U
2-Chloronaphthalene												0.41U
Acenaphthylene								2.4	0.46			0.41U
Acenaphthene								0.69				0.41U
Fluorene					12			3.1				0.410
Phenanthrene				20	55	1.5			2.2	1.5	0.85	0.44
Anthracene									0.78			0.410
Fluoranthene				14	38	2.0			2.8	2.2	0.77	1.3
Pyrene		21	13	50	83	2.2			6.7	2.3	0.81	1.4
Benzo(a)anthracene				21	28	1.3			4.5	1.5	0.48	0.79
Chrysene	-~			29	29	1.2			4.3	1.6	0.55	0.85
Benzo(b)fluoranthene					17	1.0			4.9	1.1	0.44	0.61
Benzo(k)fluroanthene					12	0.89			3.4	1.2	0.45	0.68
Benzo(a)pyrene				16	22	1.1			4.2	1.3	0.44	0.70
Indeno(1,2,3-CD) Pyrene						0.66			2.7	0.76	·	0.41U
Dibenzo(a,h)anthracene										、		0.41U
Dibenzo(g,h,i)perylene					12	0.71			2.6	0.76		0.41U
Cotal PAH Content		21	13	150	308	12.5	73	9.8	40.0	14.2	4.8	6.8
yanide	33		94	220	190		14	98	35			6.7U

^{* =} Background sample
-- = Undetected (U); Detection limit stated for bckground sample.

Note: See Figure 6-2 for sample locations and Appendix D for complete analytical results.

to 17 feet. An additional five samples (001-005) were collected at a background location (Figure 6-2; Table 6-4). CLP data revealed significant PAH contamination at least five times greater than background concentration at all four sampling locations (Table 7-2). Cyanide contamination was found to be significant to a depth of 11+ feet (Table 7-2).

All the soil samples were also analyzed for total and dissolved metals, as well as volatiles. However, results proved to be negligible when compared to background concentrations with the exception of significant concentrations of benzene, toluene, ethyl benzene, and total xylenes (BTEX) in samples 006 through 011 (except no toluene in sample 011). Significant benzene was also detected in sample 013. Styrene (14J µg/kg) was detected in sample 012.

As was the case with the surface soil samples, the cyanide contamination can be attributed to the FMGP. It is probable that the deep soil PAH contamination came from both the FMGP and the petroleum tank farm. The presence of mixed BTEX compounds and PAHs indicates a mixed source, as volatiles are not considered abundant in coal tar.

7.3 GROUND WATER SAMPLES

Ground water sampling data indicated no significant dissolved metals contamination when compared to background concentrations. Some organics were detected; however, in sample 204, piezometer well located downgradient of the site. This sample contained 3 PAHs: acenapthalene (65 µg/L), fluorene (25 µg/L), and phenanthene (46 µg/L); and 93 µg/L benzene (Figure 6-2; Appendix C). Additionally, cyanide was detected in all ground water samples at concentrations above the 17 µg/L detection limit: 520J µg/L in sample 201, 27J µg/L in sample 202, 590J µg/L in sample 203, and 1,600J µg/L in sample 204. Cyanide was not detected in the background sample.

7.4 SURFACE VATER AND SEDIMENT SAMPLES

Surface water and sediment was sampled at three locations downgradient of the site. Additionally, the East St. Louis raw water intake, located across the Mississippi River from the site was sampled

Table 7-2 PAHs and Cyanide in Subsurface Soil Samples and Product Sample

Laclede Coal Gas Site St. Louis, Missouri E & E/FIT; March 1991 Sample Series DSX44 (mg/kg)

7

Compound	(2-7')	(7-11') 002*	(11-15') 003*	(17-21') 004°	(19-23') 005*	(3-8')	(8-13') 007	(8-12') 008	(4-8') 00 <u>9</u>	(12-14') 010	(11-17') 011	(5-11') 012	(11-12.5') 013	501
Maphthalene		0.40U				23	87	2200	68	0.89	30		55	700
2-methylnaphthalene		0.40U				80	43	69	84	0.98	23			4000
2-chloronapththalene		0.40U	<u></u>											450
Acenaphthylene		0.40U						15			20			450
Acenaphtene		0.40U						32	12	0.15	15		22	620
Fluorene		0.400				20		J	13	0.17	24		21	830
Phenanthrene	1.4	0.400				63	20	J	46	0.51	71		59	4300
Anthracene	0.38	0.40U						J			23		18	810
Fluoranthene	2.0	0.52	0.54	_							180		39	620
Pyrene	2.8	0.53	0.80			48	J	J	J	J	J		65	2800
Benzo(a)anthracene	1.8	0.40U				18		J			99		21	1600
Chrysene	1.8	0.40U	0.44			18		J	16	0.18	94		21	2700
Benzo(b) fluoranthene	1.6	0.400						61			76		15	
Benzo(k)fluoranthene	1.4	0.40U						52			89		17	
Benzo(a)pyrene	1.5	0.40U						95			120		23	970
Indeno(1,2,3-CD) pyrene	0.93	0.40U						37			75			_
Dibenzo(a,h)anthra- cene		0.40U												
Oibenzo(g,h,i)pery- .ene	1.2	0.40U						44			11			
otal PAH Content	16.8	1.1	1.8			270	150	2605	239	2.9	1027		376 2	0,850
yanide	26	24				87	180	860		48	250	170		

^{* =} Background sample

Note: See Figure 6-2 for sample locations and Appendix D for complete analytical results.

^{-- =} Undetected (U) with detection limit given for background sample 002.

J = Detected, but results are invalid.

(304 and 304D). The most upgradient of these samples (302 and 402) generally exhibited the most contamination, though concentrations are fairly comparable (Tables 7-3 and 7-4). An exception is total chromium (12-14 µg/L), lead (15-18 µg/L), and zinc (46-54 µg/L) detected in samples 304 and 304D, collected from the surface water intake. These metals were not detected in the dissolved fraction of these samples. The only organics detected in these samples are relatively low levels of PAHs and cyanide found in the sediment samples (Table 7-4). A background sediment and surface water sample was not collected, so that no comparisonn to background can be made for these metals. However, sample concentrations are relatively low as compared to other samples collected.

7.5 PRODUCT SAMPLE

The oil sample (501) collected from an 80,000-gallon tank (Figure 2-3, tank #7) contained significant concentrations of many PAHs (Table 7-2). Attribution of PAH contamination on site is very difficult to assess, based on the fact that in 1986, PF & T experienced a spill of the same oil (#6) which was sampled, over the entire site. It was also common practice for FMGPs to bury their tar wastes on site. PAHs are a major constitudent of coal tar wastes. Thus, surface and subsurface soil PAH contamination could be attributable to either PF & T activities or the FMGP.

Table 7-3
Selected Total Metals
Sediment and Surface Water Samples
Laclede Coal Gas Site
St. Louis, Missouri
E & E/FIT; March 1991
Sample Series DSX44

Sample #	As	Ва	Cu	Cr	Ni	Pb	Se	V	Zn		
			Sedimen	t Sample	es (mg/k	g)	_				
401	3.7	140	9.1	8.7	10	30J		15	35J		
401D	4.0	140	8.2	9.0	11	13J	,	17	36J		
402	8.4	160	26	16	18	36J	2.0J	27	77J		
403	7.1	160	23	12	16	31J		25	64J		
	Water Samples (µg/L)										
301			,		,	7.0	,				
301D		,			,	7.2					
302		,	,	,	,	9.7					
303		280				24U	I*	62	. 89 u		
304	,	,		14		18	,		54		
304D				12		15			,		

^{* =} Invalid analysis, but 11 µg/L dissolved selenium was detected in this sample.

Note: See Figure 6-2 for sample locations and Appendix D for complete analytical results.

U = Undetected; detection limit given if above detected values.

J = Results are reported, but invalid by approved QC procedures.

Table 7-4

PAHs, Cyanide, and Total Hydrocarbons
Sediment Samples
Laclede Coal Gas Site
St. Louis, Missouri
E & E/FIT; March 1991
Sample Series DSX44

*******			2. 1. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2.
401	401D	402	403
		2900	4400
	750	5000	5100
	960	8000	6400J
	460	3500	4200
	470	3900	4900
		2900	3100
	430	2600	5600
		3500	4100
		1600	
3100	31000	8200	4900
		750 960 460 470 430	2900 750 5000 960 8000 460 3500 470 3900 2900 2900 430 2600 3500 1600

J = Results are reported, but invalid by approved QC procedures.

Note: See Figure 6-2 for sample locations and Appendix D for complete analytical results.

U = Undetected, with detection limit given.

⁻⁻⁻ Indicated undetected with detection limits below detected values.

APPENDIX C EPA ANALYTICAL DATA REPORT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

25 FUNSTON ROAD KANSAS CITY, KANSAS 66115

May 3 1996

Sverdrup Environmental, Inc.

DATE:

Data Transmittal for Activity SUBJECT:

Site Description:

Andrea Jirka, Program Manager 🗲 FROM:

Regional Laboratory, Environmental Services Division

TO:

Attached is the data transmittal for the above-referenced site. The data contained in this transmittal have been approved by the Regional Laboratory. This should be considered a Complete data transmittal (completes Partial or transmittal of). The Project Leader should notify the Regional Laboratory with 14 days of any changes in the LAST analytical database. If you have any questions, comments, or data changes, please contact Dee Simmons at 551-5129. Attachment

cc: Analytical Data File

FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115 ______ FY: 96 ACTNO: DC1CY SAMNO: 001 QCC: _ MEDIA: WATER PL: TAPIA, CECILIA ACTIVITY DES: MOUND STREET PCBS REF LATITUDE: LOCATION: ST. LOUIS MO PROJECT NUM: L33 PT: LONGITUDE: SAMPLE DES: South well water

LOCATION: St Law 5 MO

CASE/BATCH/SMO: _____ LAB: _____ END: 4/3/96 12:15 EAST: _______ DOWN: STORET/AIRS NO: DOWN: ANALYSIS REQUESTED: CONTAINER PRESERVATIVE MGP NAME 2-40 ML VIALS HCL +COOL (4 C) WV WATER VOLATILES GLASS ICED WS SEMIVOLATILES W24 PCB - G. BEEMONT GLASS ICED W24 PCB - G. BEEMONT GLASS ICED

COMMENTS: FOR SUPERFUND ONLY: SUBSITE IDENTIFIER: OPERABLE UNIT:

SAMPLE COLLECTED BY : Michael WMc Crudy

FIELD SHEET

	ENVIRONMENTAL P L SERVICES DIV.		-	_ _	66115
FY: 96 ACTNO: D	C1CY SAMNO: 001	QCC: D	MEDIA: WATER	PL: TAPIA,	CECILIA
	OUND STREET PCBS OUIS M		JECT NUM: L33		
LOCATION: CASE/BATCH/SMO: STORET/AIRS NO:		1 O LAB:	BEG: 4	13/96 12:11	FROM REF PT 5 EAST: 5 NORTH: DOWN:
GLASS 2-40 ML VIALS GLASS	PRESERVATIVE ICED HCL +COOL (4 C)	WS		ES MONT	

COMMENTS: FOR SUPERFUND ONLY: SUBSITE IDENTIFIER: OPERABLE UNIT:

SAMPLE COLLECTED BY : Michael WMcCondy

U.S. ENVIRONMENTAL PRESENVICES DIV.				66115
FY: 96 ACTNO: DC1CY SAMNO: 002	OCC: _ ME	EDIA: WATER	PL: TAPIA,	CECILIA
ACTIVITY DES: MOUND STREET PCBS LOCATION: ST. LOUIS MC	D PROJEC	CT NUM: L33	REF LATITUD	
SAMPLE DES: North well was LOCATION: St Laws MC CASE/BATCH/SMO:		BEG: ५	DATE TIME 3 46 12 : 15 3 46 12 : 45	
ANALYSIS REQUESTED: CONTAINER PRESERVATIVE 2-40 ML VIALS HCL +COOL (4 C) GLASS ICED GLASS ICED GLASS ICED GLASS ICED	WV WA WS SE W24 PC	ME TER VOLATIL MIVOLATILES B - G. BEEM B - G. BEEM	ONT	
COMMENTS: FOR SUPERFUND ONLY:	SUBSITE	IDENTIFIER:	OPERABLE	UNIT:

FIELD SHEET

DRAFT

SAMPLE COLLECTED BY: Michael WMcCurdy

	. ENVIRONMENTAL I		ION AGENCY, F		66115
	DC1CY SAMNO: 003	£.		<u>-</u>	
	MOUND STREET PCBS		JECT NUM: L33	REF LATITU PT: LONGIT	
SAMPLE DES:	St Lours 1	10 LAB:	BEG: 4 END: 4	DATE TIME / 3 / 46 9:15 / 3 / 46 9:15	EAST:
	STED: PRESERVATIVE HCL +COOL (4 C) ICED ICED ICED		NAME WATER VOLATII SEMIVOLATILES PCB - G. BEEM PCB - G. BEEM	ONT	

FOR SUPERFUND ONLY: SUBSITE IDENTIFIER: OPERABLE UNIT:

Sample did not have "F" ac codes RSCc added upon Damph receipting 4/4/96

SAMPLE COLLECTED BY: Michael McCondy

COMMENTS:

FIELD SHEET DRAFT U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115 FY: 96 ACTNO: DC1CY SAMNO: 007 QCC: F MEDIA: WATER PL: TAPIA, CECILIA ACTIVITY DES: MOUND STREET PCBS PROJECT NUM: L33 PT: LONGITUDE: LOCATION: ST. LOUIS DATE TIME FROM REF PT SAMPLE DES: TRIP BLANK EAST: LOCATION: St Louis BEG: CASE/BATCH/SMO: LAB: END: ŃORTH: STORET/AIRS NO: DOWN: ANALYSIS REQUESTED: PRESERVATIVE MGP NAME_ CONTAINER WATER VOLATILES HCL +COOL (4 C) WV 2-40 ML VIALS COMMENTS: FOR SUPERFUND ONLY: SUBSITE IDENTIFIER; OPERABLE UNIT: Lord on the formal of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the standard of the stan

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SAMPLE COLLECTED BY: Who have

DRAFT FIELD SHEET U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115 FY: 96 ACTNO: DC1CY SAMNO: 008 QCC: _ MEDIA: WATER PL: TAPIA, CECILIA ACTIVITY DES: MOUND STREET PCBS REF LATITUDE: LOCATION: ST. LOUIS MO PROJECT NUM: L33 PT: LONGITUDE: DATE TIME FROM REF PT SAMPLE DES: RINSATE LOCATION: S+ Low> MO BEG: 4/2/96 16:10 EAST:

CASE/BATCH/SMO: LAB: END: 4/2/96 16:20 NORTH:

STORET/AIRS NO: DOWN: DOWN: ANALYSIS REQUESTED: CONTAINER PRESERVATIVE MGP NAME SEMIVOLATILES

GLASS ICED WS SEMIVOLATILES
2-40 ML VIALS HCL +COOL (4 C) WV WATER VOLATILES
GLASS ICED W24 PCB - G. BEEMONT
GLASS ICED W24 PCB - G. BEEMONT

COMMENTS: FOR SUPERFUND ONLY: SUBSITE IDENTIFIER:___ OPERABLE UNIT:___

SAMPLE COLLECTED BY : Michael Will Cludy

FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115 FY: 96 ACTNO: DC1CY SAMNO: 100 QCC: _ MEDIA: SOIL PL: TAPIA, CECILIA ACTIVITY DES: MOUND STREET PCBS REF LATITUDE: LOCATION: ST. LOUIS MO PROJECT NUM: L33 PT: LONGITUDE: __________ Goopro he soul DATE TIME FROM REF PT

| Lab: | BEG: 4/2/46 | 15:50 | EAST: |
| LAB: | END: 4/2/46 | 16:00 | NORTH: | SAMPLE DES: LOCATION: C+ Louis MO CASE/BATCH/SMO: _ STORET/AIRS NO: _ DOWN: ANALYSIS REQUESTED: MGP NAME CONTAINER PRESERVATIVE SS SV GLASS ICED SEMIVOLATILES SV SOIL VOLATILES S16 PCB'S - G. BEEMONT 2-40 ML VIALS COOL (4 C) ICED GLASS Add (SG07)% solids

COMMENTS: FOR SUPERFUND ONLY: SUBSITE IDENTIFIER: OPERABLE UNIT:

SAMPLE COLLECTED BY: Michael W Mc Cudy

FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

FY: 96 ACTNO: DC1CY SAMNO: 100 QCC: D MEDIA: SOIL PL: TAPIA, CECILIA

ACTIVITY DES: MOUND STREET PCBS REF LATITUDE:
LOCATION: ST. LOUIS MO PROJECT NUM: L33 PT: LONGITUDE:

SAMPLE DES: DUPLICATE/SAMPLE 100 DATE TIME FROM REF PT
LOCATION: ST. LOUIS MO BEG: 4/2/46 16:00 EAST:
CASE/BATCH/SMO: LAB: END: 4/2/96 16:10 NORTH:
STORET/AIRS NO: DOWN:

ANALYSIS REQUESTED:
CONTAINER PRESERVATIVE MGP NAME
2-40 ML VIALS COOL (4 C) SV SOIL VOLATILES
GLASS ICED SS SEMIVOLATILES
GLASS ICED SS SEMIVOLATILES
GLASS ICED S16 PCB'S - G. BEEMONT
Add (SG07)% solids

COMMENTS: FOR SUPERFUND ONLY: SUBSITE IDENTIFIER: OPERABLE UNIT:

FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115 FY: 96 ACTNO: DC1CY SAMNO: 101 QCC: _ MEDIA: SOIL PL: TAPIA, CECILIA ACTIVITY DES: MOUND STREET PCBS REF LATITUDE: LOCATION: ST. LOUIS MO PROJECT NUM: L33 PT: LONGITUDE: ________ ANALYSIS REQUESTED: CONTAINER PRESERVATIVE MGP NAME GLASS ICED SS SEMIVOLATILES SV 2-40 ML VIALS COOL (4 C) SOIL VOLATILES GLASS ICED S16 PCB'S ~ G. BEEMONT

Add (SGO7)% solids

COMMENTS: FOR SUPERFUND ONLY: SUBSITE IDENTIFIER: OPERABLE UNIT:

SAMPLE COLLECTED BY: Whichael Willaling

FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115 FY: 96 ACTNO: DC1CY SAMNO: 102 QCC: _ MEDIA: SOIL PL: TAPIA, CECILIA ACTIVITY DES: MOUND STREET PCBS REF LATITUDE: LOCATION: ST. LOUIS MO PROJECT NUM: L33 PT: LONGITUDE: SAMPLE DES: Geogrape sal

LOCATION: St Laus MO

CASE/BATCH/SMO: LAB: END: 4/2/96 15:15 NORTH: STORET/AIRS NO: ANALYSIS REQUESTED: CONTAINER PRESERVATIVE MGP SS SEMIVOLATILES
SV SOIL VOLAMITE NAME GLASS ICED 2-40 ML VIALS COOL (4 C) SV SOIL VOLATILES S16 PCB'S - G. BEEMONT GLASS ICED Add (SGO7)% solids

COMMENTS: FOR SUPERFUND ONLY: SUBSITE IDENTIFIER: OPERABLE UNIT:

SAMPLE COLLECTED BY: Michael W.Mc Cinds

FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115 FY: 96 ACTNO: DC1CY SAMNO: 103 QCC: _ MEDIA: SOIL PL: TAPIA, CECILIA ACTIVITY DES: MOUND STREET PCBS REF LATITUDE: MO PROJECT NUM: L33 PT: LONGITUDE: LOCATION: ST. LOUIS SAMPLE DES: Geograf DATE TIME FROM REF PT

BEG: 4/2/96 15:15 EAST:

END: 4/2/96 15:30 NORTH: MO LOCATION: CASE/BATCH/SMO: STORET/AIRS NO: ANALYSIS REQUESTED: CONTAINER PRESERVATIVE MGP NAME GLASS SS SEMIVOLATILES ICED 2-40 ML VIALS COOL (4 C) sv SOIL VOLATILES S16 PCB'S - G. BEEMONT GLASS ICED

Add (SCO7)% solida

COMMENTS: FOR SUPERFUND ONLY: SUBSITE IDENTIFIER: OPERABLE UNIT:

SAMPLE COLLECTED BY: Michael WM caudy

FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115 FY: 96 ACTNO: DC1CY SAMNO: 104 QCC: _ MEDIA: SOIL PL: TAPIA, CECILIA

ACTIVITY DES: MOUND STREET PCBS REF LATITUDE: LOCATION: ST. LOUIS MO PROJECT NUM: L33 PT: LONGITUDE:

SAMPLE DES: Geografia borng SAMPLE DES: Geografia borng

LOCATION: 5+ Louis MO

CASE/BATCH/SMO: LAB: END: 4/3/96 9:15 EAST:

EMDET MINE NO: WORTH: STORET/AIRS NO: DOWN:

ANALYSIS REQUESTED:

CONTAINER PRESERVATIVE MGP NAME

SS SEMIVOLATILES
SV SOIL VOLUMETER GLASS ICED 2-40 ML VIALS COOL (4 C) SOIL VOLATILES

S16 PCB'S - G. BEEMONT GLASS ICED

Add (SG07)% solids

COMMENTS: FOR SUPERFUND ONLY: SUBSITE IDENTIFIER: OPERABLE UNIT:

SAMPLE COLLECTED BY: Milesel Wite County

FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII 25 FUNSTON RD. KANSAS CITY, KS 66115 ENVIRONMENTAL SERVICES DIV. FY: 96 ACTNO: DC1CY SAMNO: 108 QCC: F MEDIA: SOIL TAPIA, CECILIA ACTIVITY DES: MOUND STREET PCBS LOCATION: ST. LOUIS PROJECT NUM: L33 PT: LONGITUDE: SAMPLE DES: TRIP BLANK FROM REF PT DATE TIME LOCATION: _ 5+ Louis BEG: EAST: CASE/BATCH/SMO: // END: LAB: NORTH: STORET/AIRS NO: DOWN: ANALYSIS REQUESTED: VOA CONTAINER PRESERVATIVE MGP NAME 2-40 ML VIALS COOL (4 C) SOIL VOLATILES SV Add (8007)% soli COMMENTS: FOR SUPERFUND ONLY: SUBSITE IDENTIFIER: OPERABLE UNIT:

SAMPLE COLLECTED BY: Michael W Mc Coud

CHAIN OF CUSTODY RECORD ENVIRONMENTAL PROTECTION AGENCY REGION VII

ACTIVITY LEADER (P	rint)	,		NAME	OF SU	RVEY (OR ACTIVITY	Υ					DATE OF COLLECTION SHEET		
Michael	Mc Cu	rdy		Mou	und	<u>\$</u> 5	rect 1	<u>مح</u>	<u>8</u>				DAY MONTH YEAR 1 01 Z		
CONTENTS OF SHIP	MENT	, , , , , , , , , , , , , , , , , , ,	_												
SAMPLE	ERS		Luga cer	SAMPLED MEDIA					RECEIVING LABORATORY						
NUMBER	CUBITAINER	80 c Z BOTTLE	<u> </u>	OTTLE	BOT		VOA SET (2 VIALS EA)	waie.	Soil	sediment	2	other	REMARKS:OTHER INFORMATION (condition of samples upon receipt other sample numbers etc.)		
		ERS OF CO	MTAINE	RS PER S	AMPLE N	UMBER		*	, ,	*	3		Oner sample numbers etc.)		
DCICY 100	2:		↓		<u> </u>		1 '	L	X.						
DCICY 100D	2:				<u> </u>		1 '		X						
DCICY 101	ス:						1 '		M						
DCICY 102	2:				<u> </u>		1/		X.						
DCICY 103	2:						1 '		X						
DCICY 008		4::				-	11:	X			\Box				
DCICY 0078						/.	*1.	Χ					HCL preservative also		
DCICYIOS F	_					77	X1.		X				included in one of		
					7								the coolers		
	- · · -														
					1								Total of 5 coolers		
	`					$\sqrt{\lambda}$	ansle		1		7)	for 2 days		
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DESCRIPTION OF SH	IPMENT					MODE OF SHIPMENT									
PIECE(S) CC	NSISTING OF		BO	X(ES)			СОММЕ	RCIA	L CA	ARRI	IER.				
ICE CHEST(-	COURIE								
							SAMPLE	R C	JNVI	EYEC)	_	(SHIPPING DOCUMENT NUMBER)		
PERSONNEL CUSTO	DY RECORD	ĪDĀT							4	۷	Ш	9 (6 11:33		
RELINQUISHED BY	RECEI	VED BY			_ /	6		REASON FOR CHANGE OF CUSTODY							
Muchael W. A	3	R	ann	4	بمر	إر		2	January &						
RELINQUISHED BY	F	SEA	VED BY	-	UNS	LA	LEC	, <u> </u>	REASON FOR CHANGE OF CUSTODY						
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RELINQUISHED BY		DAT	E	TIME		RECEI	VED BY						REASON FOR CHANGE OF CUSTODY		
UNSFALED.							LED		UN						

CHAIN OF CUSTODY RECORD ENVIRONMENTAL PROTECTION AGENCY REGION VII

ACTIVITY LEADER(F	Print)	1				OR ACTIVITY	ΥΛ	- 0				DATE OF COLLECTION SHEET
Michael CONTENTS OF SUID	Mc Cur	dy	100	und	. 54	reet		CB				DAY MONTH YEAR 2 01 2
CONTENTS OF SHIP	MENI	TYP	E OF CONTAIN	ERS			T 3	AMPL	FD.	MED	IÀ.	
SAMPLE NUMBER	2 o Z CUBITAINER	SO 02 BOTTLE	BOTTLE	BOT		VOA SET			1		other	RECEIVING LABORATORY REMARKS OTHER INFORMATION (condition of samples upon receipt)
NOWBEN			AINERS PER S				ig i	ğ	ğ	dest		other sample numbers, etc.)
DCICY 104	2:	_				1.		X				
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DCICY COID		4::				1,	X		7	4	_	
DCICY DO2		4::				1.	X					ain Bubbles
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DESCRIPTION OF SH	IPMENT		3		М	ODE OF SHI	PME	NT				**************************************
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1 _	INSISTING OF		- BOX(E2)			COURIE		LUA	nnı	En.		
ICE CHEST(SAMPLER CONVEYED (SHIPPING DOCUMENT NUMBER)									
PERSONNEL CUSTO							4	Ÿ	10	1		11:33
RELINQUISHED BY	SAMPLER)	DATE	/		A .	VED BY	\subset	۱۵	Λ	L		REASON FOR CHANGE OF CUSTODY
muchael Wh	UNSEALE	2 7/4	196 11:3,	> [~		٠ ,		حد	1 \ 		analyse
SEALED RELINQUISHED BY	OHSEAVE	DATE				VED BY		ŻNSI	-AL	-6L		REASON FOR CHANGE OF CUSTODY
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SEALED	UNSEALE			}	SEA	LED		טאט	EΑ	LEI		

AIRS/

FOR ACTIVITY: DC1CY

TAPIA, CECILIA 05/03/96 16:55:08 ALL REAL SAMPLES AND FIELD Q.C.

FINAL REPORT

FY: 96 ACTIVITY: DC1CY DESCRIPTION: HOUND STREET PCBS LOCATION: ST. LOUIS MISSOURI

> PROJECT: L33 STATUS: ACTIVE TYPE: SAMPLING - IN HOUSE ANALYSIS

LABO DUE DATE IS 5/4/96. REPORT DUE DATE IS 6/2/96.

INSPECTION DATE: 4/ 3/96 ALL SAMPLES RECEIVED DATE: 04/04/96

ALL DATA APPROVED BY LABO DATE: 05/03/96 FINAL REPORT TRANSMITTED DATE: 05/03/96

EXPECTED LABO TURNAROUND TIME IS 30 DAYS EXPECTED REPORT TURNAROUND TIME IS 60 DAYS

ACTUAL LABO TURNAROUND TIME IS 29 DAYS ACTUAL REPORT TURNAROUND TIME IS 30 DAYS

SITE CODE: CY SITE: MOUND STREET POWER STATION

AMP. No.		н	DESCRIPTION	SAMPLE Status	# CITY		TORÈT LAY- BEG. OC NO SECT ER DATE	BEG. Time	END. Date	END. Time
			***************************************			011112				
001		¥	SOUTH WELL WATER	1	ST. LOUIS	MISSOURI	04/03/96	12:15	04/03/96	13:35
001	D	¥	SOUTH WELL WATER/DUPLICATE	1	ST. LOUIS	MISSOURI	04/03/96	12:15	04/03/96	13:35
002	-	W	NORTH WELL WATER		ST. LOUIS	MISSOURI	04/03/96	12:15	04/03/96	12:45
003	F	Ü	FIELD BLANK		ST. LOUIS	MISSOURI	04/03/96	09:15	04/30/96	09:25
007	F	V	TRIP BLANK		ST. LOUIS	MISSOURI	00/00/00	00:00	00/00/00	00:00
800		Ų	RINSATE	1	ST. LOUIS	MISSOURI	04/02/96	16:10	04/02/96	16:20
100		S	GEOPROBE SOIL	1	ST. LOUIS	MISSOURI	04/02/96	15:50	04/02/96	16:00
100	D	S	GEOPROBE SOIL/DUPLICATE	1	ST. LOUIS	MISSOURI	04/02/96	16:00	04/02/96	16:10
101		S	GEOPROBE SOIL	1	ST. LOUIS	MISSOURI	04/02/96	10:55	04/02/96	11:05
102		S	GEOPROBE SOIL	1	ST. LOUIS	MISSOURI	04/02/96	15:00	04/02/96	15:15
103		S	GEOPROBE SOIL	1	ST. LOUIS	MISSOURI	04/02/96	15:15	04/02/96	15:30
104		S	GEOPROBE BORING	_	ST. LOUIS	MISSOURI	04/03/96	09:15	04/03/96	09:30
108	F	S	TRIP BLANK		ST. LOUIS	MISSOURI	00/00/00	00:00	00/00/00	00:00

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SAMPLE INFORMATION:
                                                                                                                                                                    ANALYTICAL RESULTS/HEASUREMENTS INFORMATION:
                           = SAMPLE IDENTIFICATION NUMBER (A 3-DIGIT NUMBER COMPOUND = HGP (MEDIA-GROUP-PARAMETER) CODE AND NAME OF
                                                                                                                                                                                             THE MEASURED CONSTITUENT OR CHARACTERISTIC
                                 WHICH IN COMBINATION WITH THE ACTIVITY NUMBER
                                 AND QCC, PROVIDES AN UNIQUE NUMBER FOR EACH SAMPLE
                                                                                                                                                                                             OF EACH SAMPLE
                                 FOR IDENTIFICATION PURPOSES)
                                                                                                                                                                    UNITS
                                                                                                                                                                                        = SPECIFIC UNITS IN WHICH RESULTS ARE REPORTED:
                            = QUALITY CONTROL CODE (A ONE-LETTER CODE USED TO DESIGNATE SPECIFIC QC SAMPLES. THIS FIELD WILL BE BLANK FOR ALL NON-QC OR ACTUAL SAMPLES):
 QCC
                                                                                                                                                                                          C = CENTIGRADE (CELSIUS) DEGREES
                                                                                                                                                                                        CFS = CUBIC FEET PER SECOND
                                                                                                                                                                                        GPM = GALLONS PER MINUTE
                                                                                                                                                                                     IN = INCHES
I.D. = SPECIES IDENTIFICATION
                                 B = CAL INCREASED CONCENTRATION FOR A LAB SPIKED DUP SAMPLE
                                D = MEASURED VALUE FOR FIELD DUPLICATE SAMPLE

F = MEASURED VALUE FOR FIELD BLANK

G = MEASURED VALUE FOR METHOD STANDARD

H = TRUE VALUE FOR METHOD STANDARD
                                                                                                                                                                                         KG = KILOGRAM
L = LITER
                                G = MEASURED VALUE FOR METHOD STANDARD
H = TRUE VALUE FOR METHOD STANDARD
K = CAL INCREASED CONCENTRATION FOR FIELD SPIKED DUP SAMPLE
L = MEASURED VALUE FOR A LAB DUPLICATE SAMPLE
MGD = MILLIGRAMS (1 X 10-3 GRAMS)
L = MEASURED VALUE FOR A LAB DUPLICATE SAMPLE
MGD = MILLION GALLONS PER DAY
                                 H = HEASURED VALUE FOR A LAB DUPLICATE SAMPLE
H = HEASURED VALUE FOR LAB BLANK
                                                                                                                                                                                         MPH = MILES PER HOUR
                                                                                                                                                                                       HV = HILLIVOLT
H/F = HALE/FEHALE
                                 N = MEASURED CONCENTRATION OF FIELD SPIKED DUPLICATE
                               R = CAL INCREASED CONCENTRATION RESULTING FROM LAB SPIKE

S = MEASURED CONCENTRATION OF LAB SPIKED SAMPLE

T = TRUE VALUE OF PERFORMANCE STANDARD

W = MEASURED CONCENTRATION OF LAB SPIKED DUPLICATE

M = MEASURED CONCENTRATION OF LAB SPIKED DUPLICATE

M = MEASURED CONCENTRATION OF FIELD SPIKED SAMPLE

T = CAL INCREASED CONCENTRATION OF FIELD SPIKED SAMPLE

M = MEASURED VALUE OF FIRST SPIKED REPLICATE

M = MEASURED VALUE OF SECOND SPIKED REPLICATE

M = MEASURED VALUE OF THIRD SPIKED REPLICATE

M = MEASURED VALUE OF THIRD SPIKED REPLICATE

M = MEASURED VALUE OF FIFTH SPIKED REPLICATE

M = MEASURED VALUE OF SIXTH SPIKED REPLICATE

M = MEASURED VALUE OF SIXTH SPIKED REPLICATE

M = MEASURED VALUE OF SIXTH SPIKED REPLICATE

M = MEASURED VALUE OF SIXTH SPIKED REPLICATE

M = MEASURED VALUE OF SIXTH SPIKED REPLICATE

M = MICROGRAMS (1 X 10-6 GRAMS)

M = MICROGRAMS (1 X 10-6 GRAMS)

M = MICROGRAMS PER SQUARE CENTIMETERS

M = AIR H = HAZARDOUS WASTE/OTHER

M = MALE/FEMALE

M2 = SQUARE METER

M3 = CUBIC METER

M3 = CUBIC METER

M4 = NOT APPLICABLE

M3 = CUBIC METER

M4 = NOT APPLICABLE

M4 = NOT APPLICABLE

M4 = NOT APPLICABLE

M4 = NOT APPLICABLE

M4 = NOT APPLICABLE

M5 = SQUARE METER

M4 = NOT APPLICABLE

M5 = SQUARE METER

M4 = NOT APPLICABLE

M5 = NANOGRAMS (1 X 10-9 GRAMS)

NTU = NEPHELOMETRIC TURBIDITY UNITS

M/F = MALE/FEMALE

M2 = SQUARE METER

M3 = CUBIC METER

M4 = NOT APPLICABLE

M5 = SQUARE METER

M4 = NOT APPLICABLE

M5 = SQUARE METER

M4 = NOT APPLICABLE

M5 = SQUARE METER

M4 = NOT APPLICABLE

M5 = SQUARE METER

M4 = NOT APPLICABLE

M5 = NANOGRAMS (1 X 10-12) CURRIES

M6 = NICROGRAMS PER SQUARE CENTIMETERS

M7 = MEASURED VALUE OF SEVENTH SPIKED REPLICATE

M6 = MICROGRAMS PER SQUARE CENTIMETERS

M7 = MICROGRAMS PER SQUARE CENTIMETERS

M7 = MICROGRAMS PER SQUARE CENTIMETERS

M7 = MICROGRAMS PER SQUARE CENTIMETERS

M7 = MEASURED VALUE OF SEVENTH METER MEDIA

M7 = MICROGRAMS PER SQUARE CENTIMETERS

M7 = MICROGRAMS PER SQUARE CENTIMETERS

M7 = MICROGRAMS PER SQUARE CENTIMETERS

M7 = MICROGRAMS PER SQUARE CENTIMET
                            = MEDIA CODE (A ONE-LETTER CODE DESIGNATING THE MEDIA
                                 A = AIR H = HAZARDOUS WASTE/OTHER
                                                                                                                                                                                             1000G = 1000 GALLONS
                                                                                                                                                                                             +/- = POSITIVE/NEGATIVE
# = NUMBER
                                 S = SOLID (SOIL, SEDIMENT, SLUDGE)
T = TISSUE (PLANT & ANIMAL)
                                 W = WATER (GROUND WATER, SURFACE WATER, WASTE WATER, DATA QUALIFIERS = SPECIFIC CODES USED IN CONJUNCTION WITH DRINKING WATER)

ORDINKING WATER)
                                          DRINKING WATER)
                                                                                                                                                                                             ON THE REPORTED RESULTS, OR USED TO EXPLAIN THE ABSENCE OF A SPECIFIC VALUE:

BLANK = IF FIELD IS BLANK, NO REMARKS OR

QUALIFIERS ARE PERTINENT. FOR FINAL
DESCRIPTION = A SHORT DESCRIPTION OF THE LOCATION WHERE SAMPLE WAS
                                 COLLECTED
AIRS/STORET LOC. NO. = THE SPECIFIC LOCATION ID NUMBER OF EITHER OF
THESE NATIONAL DATABASE SYSTEMS, AS APPROPRIATE

DATE/TIME INFORMATION = SPECIFIC INFORMATION REGARDING WHEN THE SAMPLE
                                                                                                                                                                                                                REPORTED DATA, THIS MEANS THAT THE
                                                                                                                                                                                                               VALUES HAVE BEEN REVIEWED AND FOUND
                                                        WAS COLLECTED
                                                                                                                                                                  TO BE ACCEPTABLE FOR USE.

I = INVALID SAMPLE/DATA - VALUE NOT REPORTED

J = DATA REPORTED BUT NOT VALID BY APPROVED

QC PROCEDURES

K = ACTUAL VALUE OF SAMPLE IS < VALUE REPORTED

L = ACTUAL VALUE OF SAMPLE IS > VALUE REPORTED

M = DETECTED BUT BELOW THE LEVEL OF REPORTED

VALUE FOR ACCURATE QUANTIFICATION

O = PARAMETER NOT ANALYZED

U = ACTUAL VALUE OF SAMPLE IS < THE MEASUREMENT

DETECTION LIMIT (REPORTED VALUE)
                                                        BEG. DATE = DATE SAMPLING WAS STARTED
                                                        BEG. TIME = TIME SAMPLING WAS STARTED
                                                        END DATE = DATE SAMPLING WAS COMPLETED
                                                        END TIME = TIME SAMPLING WAS COMPLETED
                                                        NOTE: A GRAB SAMPLE WILL CONTAIN ONLY BEG.
                                                                      DATE/TIME
                                                                      A TIMED COMPOSITE SAMPLE WILL CONTAIN
                                                                      BOTH BEG AND END DATE/TIME TO DESIGNATE
                                                                      DURATION OF SAMPLE COLLECTION
 OTHER CODES
                                 V = VALIDATED
                                                                                                                                                                                                       DETECTION LIMIT (REPORTED VALUE)
```

COMPOUND	UNITS	001		001 D		002		003 F		007 F
P17 PCB-AROCLOR 1016	UG/L	0.40	Ū.	0.40	U	0.40 U	-:	0.40	: U	
P18 PCB-AROCLOR 1221	UG/L	0.30	U	:0.30	U	0.30 U	-:	0.30	U :	
P19 PCB-AROCLOR 1232	UG/L	0.10	U	0.10	U	0.10 U	-:	0.10	: U:	:
P20 PCB-AROCLOR 1242	uG/L	0.10	Ū	0.10	U	0.10 U	_ :	0.10	: U:	 !
P21 PCB-AROCLOR 1248	UG/L	0.20	U	0.20	U	0.20 U	-:	0.20	U :	,
P22 PCB-AROCLOR 1254	UG/L	0.14	U	0.10	U	0.077 U	-:	0.050	: U:	:
P23 PCB-AROCLOR 1260	UG/L	0.060	U	0.060	U	0.060 U	_	0.060	: U:	
SO1 PHENOL, BY GC/MS	uG/L	1.3	Ū.	:1.3	U	:1.3 U	-:	1.3	: _U :	
SO3 ETHER, BIS(2-CHLOROETHYL), BY GC/MS	UG/L	:3	U	:3	U	:3 U		3	:	
SO4 CHLOROPHENOL, 2-	UG/L	2.7	U	2.7	U	2.7 U		2.7	:	
SOS DICHLOROBENZENE,1,3-, BY GC/MS	UG/L	2.2	U	2.2	U	2.2 u		2.2	U	
SO6 DICHLOROBENZENE,1,4-	ug/L	2.3	U	2.3	U	2.3 U	-	2.3	U	
SO7 BENZYL ALCOHOL	UG/L	1.3	Ū.	1.3	U	: 1.3 U	_:	1.3	:	,
SO8 DICHLOROBENZENE,1,2-, BY GC/MS	UG/L	2.5	U	: 2.5	U	2.5 U	-:	2.5	: U:	, ————————————————————————————————————
SO9 CRESOL, ORTHO(2-METHYLPHENOL)	UG/L	2.3	U	2.3	U	2.3 U	-:	2.3	U :	,;
S10 ETHER, BIS (2-CHLOROISOPROPYL), BY GC/MS	ne/r	1.4	υ	:1.4	U	: 1 . 4 U	_:	1.4	U :	,
S11 CRESOL, PARA-(4-HETHYLPHENOL)	UG/L	:3.3	U	:3.3	u	3.3 u	_:	3.3	U	,
S12 N-NITROSODIPROPYLAMINE	UG/L	1.5	U	1.5	U	1.5 U	_:	1.5	U	. = = = = = = = = = = = = = = = = = = =
S13 HEXACHLOROETHANE, BY GC/MS	uG/L	2.4	U	2.4	U	: 2 . 4 U	_:	2.4	U	
S14 NITROBENZENE, BY GC/MS	UG/L	1.5	U	:1.5	U	: 1 . 5 U		1.5	U	,
S15 ISOPHORONE, BY GC/HS	UG/L	:5	Ū.	:5	U	:5 U		5	U	·
S16 NITROPHENOL,2-	UG/L	2.1	U	2.1	U	2.1 U		2.1	U	
S17 DIMETHYLPHENOL,2,4, BY GC/MS	UG/L	2.1	U	2.1	U	2.1 U	_	2.1	:	
S18 BENZOIC ACID, BY GC/HS	UG/L	20	υ	20	U	20 U	_	20	U	
S19 METHANE, BIS(2-CHLOROETHYOXY), BY GC/MS	ug/L	:1.4	U	1.4	U	1.4 U		1.4	U	
S20 DICHLOROPHENOL, 2,4-	UG/L	3.1	U .	3.1	U	3.1 U	-:	3.1	:	
	•:	:		:		:	-:		:	

COMPOUND	UNITS	001	001 D	002	003 F	007 F
21 TRICHLOROBENZENE,1,2,4, BY GC/MS	UG/L	5 U	5 U	5 U	:5	:
22 NAPHTHALENE, BY GC/HS	UG/L	2 U	2 U	2 0	2	v :
23 CHLOROANILINE,4-	UG/L :	5 U :	. 5 บ	5 U	5	U :
24 HEXACHLOROBUTADIENE, BY GC/MS	UG/L :	1.9 U	1.9 U	1.9 U	1.9	υ :
25 PHENOL,4-CHLORO-3-METHYL	UG/L :	2.8 U	2.8 U	2.8 U	2.8	V :
26 METHYLNAPHTHALENE, 2-	UG/L :	1.8 U	1.8 U	1.8 U	1.8	U :
27 HEXACHLOROCYCLOPENTADIENE, BY GC/MS	UG/L	10 U	10 U	10 U	10	v :
28 TRICHLOROPHENOL, 2, 4, 6	UG/L	2.5 U	2.5 U	2.5 U	2.5	U :
29 TRICHLOROPHENOL,2,4,5	UG/L	3 U	3 U	. 3 U	3	U :
30 CHLORONAPHTHALENE, 2-	UG/L	1.5 U	1.5 U	1.5 U	1.5	U :
31 NITROANILINE,2-(ORTHO)	UG/L	5 U	5 U	. 5 U	5	U :
32 PHTHALATE, DIMETHYL, BY GC/MS	UG/L	10 U	10 U	:10 U	10	U .
33 ACENAPHTHYLENE, BY GC/MS	UG/L	1.3 U	1.3 U	1.3 U	1.3	U :
34 NITROANILINE,3-	UG/L	10 U	10 U	10 U	10	U :
35 ACENAPHTHENE, BY GC/MS	UG/L :	1.1 U	1.1 U	86	1.1	u :
36 DINITROPHENOL, 2, 4, BY GC/MS	UG/L :	20 U	20 U	20 U	20	U :
37 NITROPHENOL,4-	uG/L	14 ປ	14 U	14 U	14	u :
38 DIBENZOFURAN	UG/L	1.2 U	1.2 U	1.2 U	1.2	U :
39 DINITROTOLUENE, 2, 4, BY GC/MS	UG/L	10 U	10 U	.10 U	10	U :
40 DINITROTOLUENE,2,6-	UG/L :	5 U	5 บ	. 5 U	5	U :
41 PHTHALATE, DIETHYL, BY GC/MS	UG/L	5 บ	5 U	. 5 U	:5	U :
42 ETHER, 4-CHLOROPHENYL PHENYL -	UG/L	5 U	5 U	5 0	:5	U :
43 FLUORENE, BY GC/MS	UG/L	5 U	5 U	29	:5	U :
44 NITROANILINE,4-	:UG/L	16 U	16 U	:16 U	16	U :
45 PHENOL, 4, 6-DINITRO-2-METHYL	:: UG/L	10 U	10 U	:10 U	10	:
46 N-NITROSODIPHENYLAMINE, BY GC/MS	UG/L	1 U	1 U	:1.0 U	1	: U :

COMPOUND	UNITS	001	001 D		002	003 F		007 F
WS47 ETHER, 4-BROMOPHENYL PHENYL	:UG/L	:	5	Ū	5 U	5	- <u>-</u> -	:
WS48 HEXACHLOROBENZENE, BY GC/MS	.ue/r	. 5 U	5	υ	5 U	:5	Ū	
WS49 PENTACHLOROPHENOL, BY GC/MS	UG/L	:20 U	20	U	20 U	20	U	
WSSO PHENANTHRENE, BY GC/MS	UG/L	:1.1 U	-: :1.1	U	26	1.1	Ū	:
ISS1 ANTHRACENE, BY GC/NS	:UG/L	: 5 U	-: :5	U	5 U	5	Ū	:
IS52 PHTHALATE, DI-N-BUTYL-, BY GC/MS	UG/L	: 5 U	-:	u	5 U	:5	ับ	:
SS3 FLUORANTHENE, BY GC/MS	UG/L	. 5 U	5	U	5 U	5	Ū	:
SS4 PYRENE, BY GC/MS	UG/L	:10 U	10	U	10 U	10	Ū	:
NSSS PHTHALATE, BUTYL BENZYL	uG/L	:10 U	10	U	10 U	10	ับ	:
ISS6 DICHLOROBENZIDINE, 3,3'	UG/L	:25 U	25	U	25 U	25	U	:
ISS7 ANTHRACENE, BENZO(A), BY GC/MS	UG/L	:10 U	10	U	10 U	10	U	
SS8 PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/HS	UG/L	:10 ປ	10	υ	32	10	U	:
ISS9 CHRYSENE, BY GC/MS	UG/L	:10 U	10	U	10 U	10	U	:
IS60 PHTHALATE, DI-N-OCTYL-, BY GC/MS	UG/L	:10 U	10	U	10 U	:10	Ū	:
IS61 FLUORANTHENE, BENZO(B), BY GC/HS	:UG/L	:10 U	10	U	10 U	10	Ū	:
S62 FLUORANTHENE, BENZO(K), BY GC/MS	UG/L	:10 U	:10	U	10 U	:10	Ū	:
S63 PYRENE, BENZO(A), BY GC/MS	UG/L	:10 U	:10	U	10 U	:10	U	:
IS64 PYRENE, INDENO(1,2,3-CD)	UG/L	:10 U	10	บ	10 U	:10	U	:
IS65 ANTHRACENE, DIBENZO(A,H), BY GC/MS	UG/L	:10 U	10	U	10 u	10	u	:
IS66 PERYLENE,BENZO(G,H,I), BY GC/MS	UG/L	10 U	10	U	10 U	10	- - -	:
IS67 CARBAZOLE	UG/L	:10 U	10	U	10 U	10	U	:
VVO3 CHLOROMETHANE, BY GC/MS	UG/L	.7 u	7	U	7 U	7	ับ	7
NVO4 BROMOMETHANE, BY GC/MS	.UG/L	: 4 U	- :	U	4 U	4	U	4
WVOS VINYL CHLORIDE, BY GC/MS	:UG/L	:5 U	:5	U	5 U	:5	υ	: 5 (
WVO6 CHLOROETHANE, BY GC/MS	:uG/L	: 4 U	: 4	U	4 U	: 4	U	: 4
VVO7 METHYLENE CHLORIDE (DICHLOROMETHANE)	: :UG/L	: 4 U	- : : 4	U	4 U	: 4	ū	28
		:	-:	:		:		:

COMPOUND	UNITS	001	001 D	002	003 F	007 F
OB DICHLOROETHYLENE, 1, 1-	uG/L	4 U :	4 U	4 U	4 U	4 U
09 DICHLOROETHANE, 1, 1, BY GC/MS	UG/L	3 U	3 U	. 3 U	3 U	3 U
11 CHLOROFORM, BY GC/MS	uG/L	4 U :	4 U	4 U	4 U	4 U
12 DICHLOROETHANE, 1, 2, BY GC/MS	ug/L	4 U :	4 U	4 U	4 U	4 U
13 TRICHLOROETHANE, 1, 1, 1-, BY GC/MS	uG/L	4 U:	4 U	4 U	4 U	4 U
14 CARBON TETRACHLORIDE, BY GC/MS	ug/L	4 U :	4 U	4 U	4 U	4 U
15 BROMODICHLOROMETHANE, BY GC/MS	UG/L	4 U :	4 U	4 U	4 U	4 U
16 DICHLOROPROPANE, 1, 2, BY GC/MS	UG/L	4 U	4 U	4 U	4 U	4 U
17 BENZENE, BY GC/MS	UG/L	7 U :	6 U	: 39	6 U	7 U
19 TRICHLOROETHYLENE	UG/L	4 U :	4 U	4 U	4 U	4 U
20 DICHLOROPROPYLENE, CIS-1,3, BY GC/MS	UG/L	5 U :	5 U	5 U	5 U	5 U
21 DIBROMOCHLOROMETHANE, BY GC/MS	UG/L	3 u :	3 U	3 U	3 U	3 U
22 TRICHLOROETHANE, 1, 1, 2-, BY GC/MS	UG/L	4 U:	4 U	: 4 U	4 U	4 U
24 BRONOFORM, BY GC/MS	UG/L	3 U:	3 U	. 3 U	3 U	3 U
25 TETRACHLOROETHYLENE	UG/L	4 U	4 U	4 U	4 U	4 U
26 TOLUENE, BY GC/MS	UG/L	4 U :	4 U	4 U	4 U	4 U
27 TETRACHLOROETHANE,1,1,2,2, BY GC/MS	UG/L	4 U :	4 U	: 4 U	4 U	4 U
28 CHLOROBENZENE, BY GC/MS	UG/L	4 U	4 U	4 U	4 U	4 U
29 ETHYL BENZENE, BY GC/MS	UG/L	4 U	4 U	4 U	4 U	4 U
30 ACETONE, BY GC/MS	UG/L	7	4 U	8	20	13
31 CARBON DISULFIDE, BY GC/MS	UG/L	3 U	3 U	3 U	3 U	3 U
32 METHYL ETHYL KETONE (2-BUTANONE)	UG/L	15 U	15 U	:15 U	15 ປ	15 U
34 HEXANONE, 2-	UG/L	14 U :	14 U	14 U	14 ข	14 U
35 4-METHYL-2-PENTANONE(MIBK)	UG/L	3 U:	3 U	3 U	3 U	3 U
36 STYRENE, BY GC/MS		4 U :	4 U	4 U	4 U	4 _ U
40 DICHLOROPROPYLENE, TRANS-1,3	UG/L	3 U :	3 U	3 U	3 U	3 U
		~		:	:	

VALIDATED DATA

ANALYSIS REQUEST DETAIL REPORT ACTIVITY: 6-DC1CY

COMPOUND	UNITS	001	001	D	002	003 F	007 F
WV67 XYLENE, M AND/OR P	UG/L	. 8 U	8	U	4 U	8 U	: 8 U
WY70 XYLENE, ORTHO	UG/L	4 0	4	U	4 U	4 U	. 4 U
WV72 DICHLOROBENZENE, 1, 4-(PARA)	UG/L	5 0	5	U	5 U	5 U	. 5 U
UV74 DICHLOROBENZENE, 1, 3-(META)	UG/L	. 4 U	4	U	4 U	4 U	. 4 U
WV77 DICHLOROBENZENE, 1, 2-(ORTHO)	UG/L	. 4 U	4	U	4 U	4 U	. 4 U
WV78 DICHLOROETHYLENE, TRANS-1,2	UG/L	. 3 U	3	U	3 U	. 3 U	. 3 U
WV82 DICHLOROETHYLENE, CIS-1,2	UG/L	4 0	4	V	4 U	4 U	: 4 U
ZZO1 SAMPLE NUMBER	. NA	001	001		002	003	:007
ZZOZ ACTIVITY CODE	. NA	DC1CY	DC1CY		DC1CY	DC1CY	:DC1CY
		•			•	•	•

COMPOUND	UNITS	800	100	•	100 D		101		102	
O7 SOLIDS, PERCENT	-:x:		79.4	~	77.9		81.4		: 74.4	:
17 PCB-AROCLOR 1016	ug/kg:		80	U	80	U	80	U	80	U
18 PCB-AROCLOR 1221	:UG/KG:		: 60	U	60	U	60	U	:60	U :
19 PCB-AROCLOR 1232	ug/kg:		20	U	20	U	20	U	20	U
20 PCB-AROCLOR 1242	UG/KG:		: 20	U	20	U	20	U	20	U :
21 PCB-AROCLOR 1248	UG/KG:		40	U	40	U	40	u	40	U
22 PCB-AROCLOR 1254	UG/KG:		10	U	10	U	10	u	: 10	υ:
23 PCB-AROCLOR 1260	ug/kg:		10	U	10	U	10	U	:10	U :
O1 PHENOL, BY GC/MS	UG/KG:		530	U	540	u	520	U	: 560	U
02 CARBAZOLE	UG/KG:		:330	U	330	U	320	U	:350	U
03 ETHER, BIS (2-CHLOROETHYL), BY GC/MS	UG/KG:		150	U	150	U	150	U	:160	U :
04 CHLOROPHENOL, 2-	.ug/kg:		400	U	410	U	390	U	: 430	U :
O5 DICHLOROBENZENE, 1, 3-, BY GC/MS	UG/KG:		100	U	100	U	98	U	110	U :
06 DICHLOROBENZENE, 1, 4-	UG/KG:		130	U	130	IJ	120	U	:130	υ
07 BENZYL ALCOHOL	UG/KG:		250	บ	260	U	250	U	270	U
OB DICHLOROBENZENE,1,2-, BY GC/MS	ug/kg:		150	U	150	U	150	U	:160	U
O9 CRESOL, ORTHO(2-METHYLPHENOL)	ug/KG:		:680	U	690	U	660	U	730	U
10 ETHER, BIS (2-CHLOROISOPROPYL), BY GC/MS	ug/KG		130	U	130	U	120	U	:130	U
11 CRESOL, PARA-(4-METHYLPHENOL)	UG/KG:		680	U	690	U	660	U	730	U
12 N-NITROSODIPROPYLAHINE	ug/kg		300	U	310	U	300	U	:320	U
13 HEXACHLOROETHANE, BY GC/HS	UG/KG		100	U	100	U	98	U	110	U
14 NITROBENZENE, BY GC/MS -	UG/KG:		130	U	130	U	120	U	:130	U .
15 ISOPHORONE, BY GC/MS	UG/KG		230	U	230	U	220	U	240	U
16 NITROPHENOL,2-	ug/kg:		350	U	360	U	340	U	:380	U :
17 DIMETHYLPHENOL,2,4, BY GC/MS	ug/kg:		:330	IJ	330	U	320	U	350 _	U
18 BENZOIC ACID, BY GC/MS	ug/kg		1100	U	1100	U	1100	U	1200	U

COMPOUND	UNITS	008	100		100 D		101		102	
19 METHANE, BIS(2-CHLOROETHYOXY), BY GC/M	S:UG/KG:		250	u	260	 U	250	 U	270	U
20 DICHLOROPHENOL, 2,4~	UG/KG		480	U	490	U	470	U	510	U
21 TRICHLOROBENZENE,1,2,4, BY GC/MS	UG/KG:		76	U	77	u	74	U	81	U
22 NAPHTHALENE, BY GC/MS	UG/KG:		130	U	130	น	120	U	150	
23 CHLOROANILINE,4-	uG/KG:		1000	U	:1000	u	980	u	1100	U
24 HEXACHLOROBUTADIENE, BY GC/MS	UG/KG:	~	:76	U	:77	U	74	u	81	υ
25 PHENOL, 4-CHLORO-3-METHYL	UG/KG:		480	U	490	u	470	u	510	U
26 METHYLNAPHTHALENE, 2-	UG/KG:		150	u	150	U	150	บ	160	ບ
27 HEXACHLOROCYCLOPENTADIENE, BY GC/MS	uG/KG:		76	u	77	U	74	U	81	U
28 TRICHLOROPHENOL, 2, 4, 6	UG/KG:		430	u	440	U	420	u	: 460	U
29 TRICHLOROPHENOL, 2, 4, 5	UG/KG:		530	u	540	บ	520	υ υ	:560	U
30 CHLORONAPHTHALENE, 2-	UG/KG:		180	บ	:180	U	170	U	190	U
31 NITROANILINE, 2-	uG/KG:		230	u	:230	U	220	u	:240	U
32 PHTHALATE, DIMETHYL, BY GC/MS	UG/KG:		: 200	U	210	υ	200	U	220	U
33 ACENAPHTHYLENE, BY GC/HS	UG/KG:		:180	บ	:180	υ	170	U U	:190	U
34 NITROANILINE,3-	uG/KG:		:680	บ	: 690	U	660	U	:730	U
35 ACENAPHTHENE, BY GC/MS	ug/kg:		180	u	:180	U	170	U	190	U
36 DINITROPHENOL, 2, 4, BY GC/HS	uG/KG:		1500	U	1500	U	1500	U	1600	U
37 NITROPHENOL,4-	ug/kg:		76	U	77	U	74	U	81	U
38 DIBENZOFURAN	UG/KG:		230	U	230	υ	220	U	240	U
39 DINITROTOLUENE,2,4, BY GC/MS	uG/KG:		580	บ	590	U	570	U	620	U
40 DINITROTOLUENE,2,6-	uG/KG:		250	υ	260	U	250	U	270	U
11 PHTHALATE, DIETHYL, BY GC/HS	UG/KG:		430	<i>U</i>	: 440	U	420	U	: 460	U
12 ETHER, 4-CHLOROPHENYL PHENYL	ug/kg:		:230	U	:230	U	220	u	: 240	U
i3 FLUORENE, GC/MS	ug/kg:		200	u	210	U	200	 U	220	_ U
i4 NITROANILINE,4-	ug/kg:		1600	u	:1700	U	1600		1700	U
	::-		:		:				:	

	COMPOUND	UNITS	008	100		100 Þ		101		102	
SS45 PHENOL,4	,6-DINITRO-2-METHYL	:UG/KG:		600	u	620	U	590	U	650	U :
SS46 N-NITROS	ODIPHENYLANINE, BY GC/MS	:UG/KG:		50	U	51	U	49	U	5 4	u :
SS47 ETHER, 4	-BROMOPHENYL PHENYL	:UG/KG:		230	U	230	U	220	U	240	U
SS48 HEXACHLO	ROBENZENE, BY GC/MS	:UG/KG:		200	u	210	U	200	U	220	u :
SS49 PENTACHL	OROPHENOL, BY GC/MS	:UG/KG:		530	U	540	U	520	บ	560	U :
SS50 PHENANTH	RENE, BY GC/MS	UG/KG:		200	U	210	U	200	U	220	U
SS51 ANTHRACE	NE, BY GC/MS	UG/KG:		280	U	280	U	270	U	300	U
SS52 PHTHALAT	E, DI-N-BUTYL-, BY GC/MS	UG/KG:		330	U	330	U	320	U	350	
SS53 FLUORANT	HENE, BY GC/MS	UG/KG:		100	U	100	υ	98	U	:570	:
SS54 PYRENE,	BY GC/MS	UG/KG:		300	U	310	υ	300	U	520	:
SSSS PHTHALAT	E, BUTYL BENZYL	ug/kg:		280	U	280	ป	270	U	300	
SS56 DICHLORO	BENZIDINE, 3,3'	.ug/kg:		5000	U	5100	U	4900	U	5400	υ :
SS57 ANTHRACE	NE, BENZO(A), BY GC/HS	UG/KG:		380	U	390	U	370	U	400	U :
SS58 PHTHALAT	E, BIS(2-ETHYLHEXYL), BY GC/MS	UG/KG:		450	U	460	U	440	U	: 480	U
SS59 CHRYSENE	, BY GC/HS	UG/KG:		:300	U	310	U	300	U	320	U :
SS60 PHTHALAT	E, DI-N-OCTYL-, BY GC/MS	UG/KG:		180	U	180	U	170	U	190	U
SS61 FLUORANT	HENE, BENZO(B), BY GC/MS	ug/kg:		180	U	180	U	170	U	190	U
SS62 FLUORANT	HENE, BENZO(K), BY GC/MS	UG/KG:		330	U	330	U	320	U	:350	U
S63 PYRENE,	BENZO(A), BY GC/HS	ug/kg:		380	U	390	U	370	U	400	IJ
SS64 PYRENE,	INDENO(1,2,3-CD)	uG/KG:		530	U	540	U	520	U	:560 :	U
SS65 ANTHRACE	NE, DIBENZO(A,H), BY GC/HS	UG/KG:		530	υ	540	υ	520	u	560	U :
3566 PERYLENE	,BENZO(G,H,I), BY GC/HS	uG/KG:		350	U	360	U	340	U	:380	U
SVO3 CHLOROME	THANE, BY GC/HS	uG/KG:		:16	U	21	U	12	U	20	U
SVO4 BROMOMET	HANE, BY GC/MS	UG/KG:		32	U	42	U	24	U	:39	U :
VOS VINYL CH	LORIDE, BY GC/MS	:UG/KG:		24	U	31	v	18	U	29 .	U
VO6 CHLOROET	HANE, BY GC/MS	:UG/KG:		:24	U	:31	U	18	U	29	U

									•	
COMPOUND	UNITS	800	100		100	D	101		102	
VO7 METHYLENE CHLORIDE (DICHLOROMETHANE)	UG/KG		17		21	U	12	U	: 20	U
VOB DICHLOROETHYLENE,1,1, BY GC/MS	UG/KG		8	U	10	U	6	U	10	U
109 DICHLOROETHANE, 1, 1, BY GC/MS	:UG/KG:		. 8	U	10	υ	: 6	U	10	U
/10 DICHLOROETHYLENE, TRANS-1,2	uG/KG:		: 8	U	10	U	6	U	10	U
/11 CHLOROFORM, BY GC/MS	:UG/KG:		: 8	U	:10	U	: 6	U	10	U
v12 DICHLOROETHANE,1,2, BY GC/MS	uG/KG:		: 8	U	10	U	6	u	10	U
/13 TRICHLOROETHANE,1,1,1-, BY GC/MS	uG/KG:		. 8	U	10	U	6	U	10	U
/14 CARBON TETRACHLORIDE, BY GC/MS	UG/KG:		: 8	U	10	U	6	U	10	U
/15 BROMODICHLOROMETHANE, BY GC/MS	uG/KG:		: 8	U	10	U	6	- u	10	U
16 DICHLOROPROPANE,1,2, BY GC/HS	ug/kg:		: 8	U	10	U	6		10	U
17 BENZENE, BY GC/MS	uG/KG:		8	U	10	u	6	U	10	U
18 DICHLOROPROPYLENE, TRANS-1,3	ug/kg:		8	U	10	U	6	U	10	U
19 TRICHLOROETHYLENE, BY GC/MS	ug/kg:		. 8	U	10	U	: 6	U	10	U
20 DICHLOROPROPYLENE, CIS-1, 3, BY GC/MS	ug/kg:		: 8	U	10	U	: 6	u	10	U
21 DIBRONOCHLOROMETHANE, BY GC/MS	ug/kg:		: B	บ	10	U	6	u	10	U
22 TRICHLOROETHANE,1,1,2-, BY GC/MS	:: :UG/KG:		: 8	U	10	U	6	U	10	u
24 BRONOFORM, BY GC/MS	:: :ug/kg:		: :8	U	10	U	6	U	10	U
25 TETRACHLOROETHYLENE, BY GC/MS	ug/kg:		8	U	10	U	6	U	10	Ü
26 TOLUENE, BY GC/MS	UG/KG:		8	U	10	U	6	u	10	U
27 TETRACHLOROETHANE, 1, 1, 2, 2, BY GC/MS	ug/kg:		8	U	10	U	6	U	10	U
28 CHLOROBENZENE, BY GC/HS	ug/kg:		8	U	10	U	6	υ	10	U
/29 ETHYL BENZENE, BY GC/MS	UG/KG:		: 8	U	10	U	6	U	10	U
/30 ACETONE, BY GC/HS	uG/KG:		28		70	U	18		53	U
/31 CARBON DISULFIDE, BY GC/MS	:UG/KG:			U	:10	U	6	U	: 22	
/32 METHYL ETHYL KETONE	:: :UG/KG:		: 16	U	:21	U	:12	 U	20	_ U
/34 HEXANONE, 2-	:: :UG/KG:		:16	u	:21	U	:12	U	:20	υ
	::		:		:		:		:	

COMPOUND	UNITS	800	100	· 100 D	101	102
35 4-METHYL-2-PENTANONE(HIBK)	UG/KG	:	16 u	21 U	12 U	20 U
36 STYRENE, BY GC/MS	:UG/KG	:	. 8 U	10 U	. 6 U	10 U
44 DICHLOROBENZENE, 1, 4-	:UG/KG	:	. 8 U	10 U	6 U	10 ປ
49 XYLENE, ORTHO	:UG/KG	: :	: 8 U	10 U	. 6 U	10 U
57 XYLENE, M AND/OR P	:UG/KG	:	:16 U	21 U	:6 U	20 U
60 DICHLOROBENZENE, 1, 3-	UG/KG	:	. 8 U	10 U	. 6 U	10 U
61 DICHLOROBENZENE, 1, 2-	UG/KG	:	8 U	:10 U	6 U	10 U
63 DICHLOROETHYLENE, CIS -1,2	UG/KG	:	8 U	10 U	:6 U	10 U
17 PCB-AROCLOR 1016	UG/L	0.40 U	:		:	: :
18 PCB-AROCLOR 1221	UG/L	0.30 U	:		:	: :
19 PCB-AROCLOR 1232	UG/L	0.10 U			: :	: :
20 PCB-AROCLOR 1242	UG/L	0.10 U			:	: :
21 PCB-AROCLOR 1248	UG/L	0.20 U		:	:	:
22 PCB-AROCLOR 1254	UG/L	0.050 U			:	: :
23 PCB-AROCLOR 1260	ue/r	0.060 U			:	:
O1 PHENOL, BY GC/MS	UG/L	:1.3 U	:	:		:
O3 ETHER, BIS(2-CHLOROETHYL), BY GC/MS	UG/L	3 U	:	:	:	:
04 CHLOROPHENOL, 2-	UG/L	2.7 U	:	:		:
O5 DICHLOROBENZENE,1,3-, BY GC/MS	UG/L	2.2 U		:	:	:
06 DICHLOROBENZENE,1,4-	UG/L	2.3 U		:	;	:
07 BENZYL ALCOHOL	UG/L	1.3 U		:	:	:
O8 DICHLOROBENZENE,1,2-, BY GC/MS	UG/L	2.5 U		:	: :	: :
09 CRESOL, ORTHO(2-NETHYLPHENOL)	UG/L	2.3 U	:	:	:	: :
10 ETHER, BIS(2-CHLOROISOPROPYL), BY GC/HS	UG/L	1.4 U		: 	:	:
11 CRESOL, PARA-(4-METHYLPHENOL)	UG/L	:3.3 U	:	:	;	
12 N-NITROSODIPROPYLAHINE	ug/L	1.5 U	:	:	:	
	:	:	:	-:	-:	,

COMPOUND	UNITS	800	100	100 D	101	102
S13 HEXACHLOROETHANE, BY GC/MS	UG/L	2.4 U	:			
S14 NITROBENZENE, BY GC/MS	UG/L	1.5 U	:			
S15 ISOPHORONE, BY GC/HS	UG/L	5 U	:			
S16 NITROPHENOL, 2-	UG/L	2.1 U	:			
\$17 DIMETHYLPHENOL, 2, 4, BY GC/MS	UG/L	2.1 U	:	:		
S18 BENZOIC ACID, BY GC/MS	UG/L	20 U	:	:		
S19 METHANE, BIS(2-CHLOROETHYOXY), BY GC/MS	UG/L	1.4 U		:		
S20 DICHLOROPHENOL, 2,4-	UG/L	3.1 U	:			
S21 TRICHLOROBENZENE,1,2,4, BY GC/MS	UG/L	5 U	:	:		
S22 NAPHTHALENE, BY GC/MS	UG/L	2 U				
S23 CHLOROANILINE,4-	UG/L	5 U	:			
S24 HEXACHLOROBUTADIENE, BY GC/MS	UG/L	1.9 U	:	:		
S25 PHENOL,4-CHLORO-3-METHYL	UG/L	2.8 U	:			
S26 METHYLNAPHTHALENE, 2-	UG/L	1.8 U	:			
S27 HEXACHLOROCYCLOPENTADIENE, BY GC/MS	UG/L	10 ข	:	:		
S28 TRICHLOROPHENOL, 2, 4, 6	UG/L	2.5 U	:	:		
529 TRICHLOROPHENOL, 2, 4, 5	UG/L	3 U	:	:		
S30 CHLORONAPHTHALENE, 2-	UG/L	1.5 U	:			
S31 NITROANILINE,2-(ORTHO)	UG/L	5 U	:			
S32 PHTHALATE, DIMETHYL, BY GC/MS	UG/L	10 U	:	:		
S33 ACENAPHTHYLENE, BY GC/MS	UG/L	1.3 U	:			
\$34 NITROANILINE,3-	UG/L	10 U	:	:		
S35 ACENAPHTHENE, BY GC/MS	UG/L	1.1 ບ	:	:		
s36 DINITROPHENOL, 2, 4, BY GC/MS	UG/L	20 U	:	:		
\$37 NITROPHENOL,4-	UG/L	14 U	:			-
S38 DIBENZOFURAN	UG/L	1.2 U	:			

10	2
S41 PHTHALATE, DIETHYL, BY GC/MS	
342 ETHER, 4-CHLOROPHENYL PHENYL UG/L :5 U 343 FLUORENE, BY GC/MS UG/L :5 U 344 NITROANILINE, 4- UG/L :16 U 345 PHENOL, 4, 6-DINITRO-2-METHYL UG/L :10 U 346 N-NITROSODIPHENYLAHINE, BY GC/MS UG/L :1 U 347 ETHER, 4-BROMOPHENYL PHENYL UG/L :5 U 348 HEXACHLOROBENZENE, BY GC/MS UG/L :5 U 49 PENTACHLOROPHENOL, BY GC/MS UG/L :20 U 50 PHEMANTHRENE, BY GC/MS UG/L :1.1 U 51 ANTHRACENE, BY GC/MS UG/L :5 U 52 PHTHALATE, DI-H-BUTYL-, BY GC/MS UG/L :5 U 53 FLUORANTHENE, BY GC/MS UG/L :5 U 54 PYRENE, BY GC/MS UG/L :5 U 55 PHTHALATE, BUTYL BENZYL UG/L :10 U 56 DICHLOROBENZIDINE, 3,3' UG/L :25 U 57 ANTHRACENE, BENZO(A), BY GC/MS UG/L :10 U 58 PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/MS UG/L :10 U	
143 FLUORENE, BY GC/MS	
16	
45 PHENOL, 4, 6-DINITRO-2-METHYL UG/L 10 U U 46 N-NITROSODIPHENYLAMINE, BY GC/MS UG/L 1 U U 47 ETHER, 4-BROHOPHENYL PHENYL UG/L 5 U 48 HEXACHLOROBENZENE, BY GC/MS UG/L 5 U 49 PENTACHLOROPHENOL, BY GC/MS UG/L 20 U 50 PHENANTHRENE, BY GC/MS UG/L 1.1 U 51 ANTHRACENE, BY GC/MS UG/L 5 U 51 ANTHRACENE, BY GC/MS UG/L 5 U 52 PHTHALATE, DI-N-BUTYL-, BY GC/MS UG/L 5 U 53 FLUORANTHENE, BY GC/MS UG/L 5 U 55 PHTHALATE, BY GC/MS UG/L 10 U 55 PHTHALATE, BUTYL BENZYL UG/L 10 U 55 PHTHALATE, BUTYL BENZYL UG/L 10 U 56 DICHLOROBENZIDINE, 3,3' UG/L 25 U 57 ANTHRACENE, BENZO(A), BY GC/MS UG/L 10 U 55 PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/MS UG/L 10 U 55 PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/MS UG/L 10 U 55 PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/MS UG/L 10 U	
46 N-NITROSODIPHENYLAMINE, BY GC/MS 47 ETHER, 4-BROMOPHENYL PHENYL 48 HEXACHLOROBENZENE, BY GC/MS 49 PENTACHLOROPHENOL, BY GC/MS 40 UG/L 50 PHENANTHRENE, BY GC/MS 51 ANTHRACENE, BY GC/MS 52 PHTHALATE, DI-N-BUTYL-, BY GC/MS 53 FLUORANTHENE, BY GC/MS 54 PYRENE, BY GC/MS 55 PHTHALATE, BUTYL BENZYL 56 DICHLOROBENZIDINE, 3,3' 57 ANTHRACENE, BENZO(A), BY GC/MS 58 PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/MS 59 UG/L 10 U 11 U 12 U 13 UG/L 10 U 15 U 15 U 16 DICHLOROBENZIDINE, 3,3' 17 UG/L 18 UG/L 19 U 19 U 10 U 11 U 12 U 15 U 15 U 16 DICHLOROBENZIDINE, 3,3' 17 UG/L 18 UG/L 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U 19 U	
47 ETHER, 4-BROMOPHENYL PHENYL UG/L 5 U 48 HEXACHLOROBENZENE, BY GC/MS UG/L 5 U 49 PENTACHLOROPHENOL, BY GC/MS UG/L 20 U 50 PHENANTHRENE, BY GC/MS UG/L 1.1 U 51 ANTHRACENE, BY GC/MS UG/L 5 U 52 PHTHALATE, DI-N-BUTYL-, BY GC/MS UG/L 5 U 53 FLUORANTHENE, BY GC/MS UG/L 5 U 54 PYRENE, BY GC/MS UG/L 10 U 55 PHTHALATE, BUTYL BENZYL UG/L 10 U 56 DICHLOROBENZIDINE, 3,3' UG/L 25 U 57 ANTHRACENE, BENZO(A), BY GC/MS UG/L 10 U 58 PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/MS UG/L 10 U	
48 HEXACHLOROBENZENE, BY GC/MS 49 PENTACHLOROPHENOL, BY GC/MS UG/L 20 U 50 PHENANTHRENE, BY GC/MS UG/L 1.1 U 51 ANTHRACENE, BY GC/MS UG/L 5 U 52 PHTHALATE, DI-N-BUTYL-, BY GC/MS UG/L 5 UG/L 5 U 53 FLUORANTHENE, BY GC/MS UG/L 5 UG/L 5 U 55 PHTHALATE, BUTYL BENZYL UG/L 10 U 56 DICHLOROBENZIDINE, 3,3' UG/L 25 U 57 ANTHRACENE, BENZO(A), BY GC/MS UG/L 10 U 58 PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/MS UG/L 10 U U U U U U U U U U U U U	
49 PENTACHLOROPHENOL, BY GC/MS UG/L :20 U 50 PHENANTHRENE, BY GC/MS UG/L :1.1 U 51 ANTHRACENE, BY GC/MS UG/L :5 U 52 PHTHALATE, DI-N-BUTYL-, BY GC/MS UG/L :5 U 53 FLUORANTHENE, BY GC/MS UG/L :5 U 54 PYRENE, BY GC/MS UG/L :10 U 55 PHTHALATE, BUTYL BENZYL UG/L :10 U 56 DICHLOROBENZIDINE, 3,3' UG/L :25 U 57 ANTHRACENE, BENZO(A), BY GC/MS UG/L :10 U 58 PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/MS UG/L :10 U	
1.1 U	.
S1 ANTHRACENE, BY GC/MS	
52 PHTHALATE, DI-N-BUTYL-, BY GC/MS	
153 FLUORANTHENE, BY GC/MS	
10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U 10 U U 10 U 10 U 10 U 10 U 10 U 10 U 10	
S5 PHTHALATE, BUTYL BENZYL UG/L 10 U : 56 DICHLOROBENZIDINE, 3,3' UG/L 25 U : 57 ANTHRACENE, BENZO(A), BY GC/MS UG/L 10 U : 58 PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/MS UG/L 10 U :	
S6 DICHLOROBENZIDINE, 3,3' UG/L :25 U S7 ANTHRACENE, BENZO(A), BY GC/MS UG/L :10 U S8 PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/MS :UG/L :10 U	
57 ANTHRACENE, BENZO(A), BY GC/MS : UG/L :10 U: 58 PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/MS : UG/L :10 U	
58 PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/MS:UG/L:10 U:	
SEO CHRYSENE BY CC/NC	
359 CHRYSENE, BY GC/HS : UG/L :10 U : : : : : : : : : : : : : : : : : :	
60 PHTHALATE, DI-N-OCTYL-, BY GC/MS : UG/L :10 U :	
61 FLUORANTHENE, BENZO(B), BY GC/MS : UG/L :10 U :	
62 FLUORANTHENE, BENZO(K), BY GC/MS : UG/L :10 U :	
63 PYRENE, BENZO(A), BY GC/HS :UG/L :10 U :	
64 PYRENE, INDENO(1,2,3-CD) : UG/L :10 U :	

COMPOUND	UNITS	800	100	100 D	101	102
1865 ANTHRACENE, DIBENZO(A,H), BY GC/MS	UG/L 1	IO U				
JS66 PERYLENE,BENZO(G,H,I), BY GC/MS	.uG/L :1	IO U		,		
S67 CARBAZOLE	UG/L 1	IO U			;;	
VVO3 CHLOROMETHANE, BY GC/MS	UG/L 7	7 U	;			
WVO4 BRONOMETHANE, BY GC/MS	UG/L 4	Ü				
WVOS VINYL CHLORIDE, BY GC/HS	UG/L 5	S U				
WVO6 CHLOROETHANE, BY GC/MS	UG/L 4	U	:	;		
WVO7 METHYLENE CHLORIDE (DICHLOROMETHANE)	.UG/L :4	U				
VO8 DICHLOROETHYLENE,1,1-	UG/L 4	U	1			
IVO9 DICHLOROETHANE,1,1, BY GC/MS	:UG/L :3	J U				
JV11 CHLOROFORH, BY GC/MS	.UG/L :4	U				
JV12 DICHLOROETHANE,1,2, BY GC/MS	.UG/L :4	U		·		
JV13 TRICHLOROETHANE,1,1,1-, BY GC/MS	UG/L :4	U				
/V14 CARBON TETRACHLORIDE, BY GC/MS	UG/L :4	U	,	,; ;		
V15 BROMODICHLOROHETHANE, BY GC/MS	.UG/L :4	U				
1V16 DICHLOROPROPANE,1,2, BY GC/HS	.υG/L :4	U				
V17 BENZENE, BY GC/MS	:UG/L :6	U				
V19 TRICHLOROETHYLENE	UG/L :4	U		1		·
V20 DICHLOROPROPYLENE, CIS-1,3, BY GC/MS	:UG/L :5	U		·		
V21 DIBROMOCHLOROMETHANE, BY GC/MS	UG/L :3	J U		,		
'V22 TRICHLOROETHANE,1,1,2-, BY GC/HS	:UG/L :4	U				
V24 BRONOFORM, BY GC/MS	:UG/L :3	J U				
V25 TETRACHLOROETHYLENE	.UG/L :4	U	,	,		
V26 TOLUENE, BY GC/MS	UG/L 4	U				
V27 TETRACHLOROETHANE, 1, 1, 2, 2, BY GC/MS	UG/L 4	U				
V28 CHLOROBENZENE, BY GC/MS	UG/L 4	U			,	
	-::-			; :	:	:

VALIDATED DATA

ANALYSIS REQUEST DETAIL REPORT ACTIVITY: 6-DC1CY

COMPOUND	UNITS	800	100	100 D	101	102
WV29 ETHYL BENZENE, BY GC/MS	UG/L	4 U	:			
UV30 ACETONE, BY GC/MS	UG/L	15		:		
WV31 CARBON DISULFIDE, BY GC/HS	UG/L	3 U				
WV32 METHYL ETHYL KETONE (2-BUTANONE)	UG/L	15 U	:			
WV34 HEXANONE, 2-	UG/L	14 U		:		
UV35 4-METHYL-2-PENTANONE(MIBK)	UG/L	3 U	:	:		
WV36 STYRENE, BY GC/MS	uG/L	4 U	:		:	
WV40 DICHLOROPROPYLENE, TRANS-1,3	.UG/L	3 U		:	:	
WV67 XYLENE, M AND/OR P	UG/L	8 U		:	:	·
WV70 XYLENE, ORTHO	:UG/L	4 U		:	: :	 : :
WV72 DICHLOROBENZENE,1,4-(PARA)	UG/L	5 U	:		:	: :
WV74 DICHLOROBENZENE,1,3-(META)	טפ/ג	4 U		:	:	: :
WV77 DICHLOROBENZENE,1,2-(ORTHO)	UG/L	4 U			:	
WV78 DICHLOROETHYLENE,TRANS-1,2	UG/L	3 U	:			:
WV82 DICHLOROETHYLENE,CIS-1,2	UG/L	4 U	:		:	:
ZZO1 SAMPLE NUMBER	. NA	008	100	100	101	:102
ZZOZ ACTIVITY CODE	NA .	DC1CY	DC1CY	DC1CY	DC1CY	DC1CY
	::		·;	:	:	

COMPOUND	UNITS	103	104	108 F		·
SGO7 SOLIDS, PERCENT	x	74.7	77.1	99.3		
SP17 PCB-AROCLOR 1016	UG/KG	80 U	80 U	:		
SP18 PCB-AROCLOR 1221	UG/KG	60 U	60 U			
SP19 PCB-AROCLOR 1232	UG/KG	20 U	20 U		_	
SP2O PCB-AROCLOR 1242	UG/KG	20 U	20 U	:		
SP21 PCB-AROCLOR 1248	UG/KG	40 U	40 U	:		
SP22 PCB-AROCLOR 1254	uG/KG	10 U	.10 U	:		:
SP23 PCB-AROCLOR 1260	UG/KG	10 ປ	10 U			
SSO1 PHENOL, BY GC/MS	UG/KG	560 U	540 U			
SSO2 CARBAZOLE	UG/KG	350 U	340 U			
SSO3 ETHER,BIS(2-CHLOROETHYL), BY GC/MS	ug/kg	160 U	160 U			:
SSO4 CHLOROPHENOL, 2-	uG/KG	430 U	410 U			
SSO5 DICHLOROBENZENE,1,3-, BY GC/MS	UG/KG	110 U	100 U	:		
SSO6 DICHLOROBENZENE,1,4~	ug/kg	130 U	130 U			
SSO7 BENZYL ALCOHOL	uG/KG	270 U	260 U			
SSOB DICHLOROBENZENE,1,2~, BY GC/MS	UG/KG	160 U	160 U			
SSO9 CRESOL, ORTHO(2-METHYLPHENOL)	ug/kg	720 U	700 U			
SS10 ETHER,BIS(2-CHLOROISOPROPYL), BY GC/MS	ug/kg	130 U	130 U			
SS11 CRESOL, PARA-(4-METHYLPHENOL)	ug/kg	720 U	700 U			:
SS12 N-NITROSODIPROPYLAMINE	UG/KG	320 U	:310 U			:
SS13 HEXACHLOROETHANE, BY GC/MS	UG/KG	110 ປ	100 U			:
SS14 NITROBENZENE, BY GC/MS	uG/KG	130 U	:130 U			
SS15 ISOPHORONE, BY GC/MS	ug/kg	240 U	230 U			
SS16 NITROPHENOL,2-	uG/KG	380 U	360 U			
SS17 DIMETHYLPHENOL,2,4, BY GC/MS	UG/KG	350 U	340 U			-
SS18 BENZOIC ACID, BY GC/MS	UG/KG	1200 U	1100 U	:		
₄						

COMPOUND	UNITS	103	104		108 F		·	
SS19 METHANE, BIS(2-CHLOROETHYOXY), BY GC/M	s:UG/KG:27	0 U	260	U				
SS20 DICHLOROPHENOL, 2,4-	UG/KG 51	o u	490	U				. :
SS21 TRICHLOROBENZENE,1,2,4, BY GC/MS	UG/KG:80	U	78	U :				.:
SS22 NAPHTHALENE, BY GC/MS	UG/KG:13	0 и	130	U :			: 	. :
SS23 CHLOROANILINE,4-	UG/KG:11	00 U	1000	U				<u>.</u> :
SS24 HEXACHLOROBUTADIENE, BY GC/MS	UG/KG:80	U	78	υ:			: :	<u>:</u>
SS25 PHENOL,4-CHLORO-3-METHYL	:UG/KG:51	O U	490	U :			: :	- :
SS26 METHYLNAPHTHALENE, 2-	:UG/KG:16	0 U	160	U		: :	: :	
SS27 HEXACHLOROCYCLOPENTADIENE, BY GC/MS	:UG/KG:80) U	:78	U		: :		- :
SS28 TRICHLOROPHENOL, 2, 4, 6	UG/KG:46	0 U	440	U :				- :
SS29 TRICHLOROPHENOL, 2, 4, 5	:UG/KG:56	0 U	540	U		: :	: :	.:
SS30 CHLORONAPHTHALENE, 2-	:UG/KG:19	0 U	:180	U :		: :	: :	_:
SS31 NITROANILINE, 2-	UG/KG:24	0 u	230	U		· · ·	: :	_ :
SS32 PHTHALATE, DIMETHYL, BY GC/MS	UG/KG:21	0 U	210	U :		·	: :	. :
SS33 ACENAPHTHYLENE, BY GC/HS	:UG/KG:19	00 и	:180	U		: :	: :	_ :
SS34 NITROANILINE,3-	UG/KG:72	.O U	700	U			: :	_ :
SS35 ACENAPHTHENE, BY GC/MS	:UG/KG:19	0 u	180	U		: :	: :	_ :
SS36 DINITROPHENOL, 2, 4, BY GC/MS	.UG/KG:16	500 U	1600	U		:	: :	_ :
SS37 NITROPHENOL,4-	.ug/kg:80) U	78	U		: :	: :	_ :
SS38 DIBENZOFURAN	UG/KG:24	, O U	230	υ :		: :	: :	_:
SS39 DINITROTOLUENE, 2, 4, BY GC/MS	UG/KG:62	20 U	600	u			: :	_ : _ :
SS40 DINITROTOLUENE,2,6-	UG/KG:27	70 U	260	U		: :	: :	_:
SS41 PHTHALATE, DIETHYL, BY GC/MS	UG/KG:46	50 U	440	U		:	: :	_ :
SS42 ETHER, 4-CHLOROPHENYL PHENYL	UG/KG:24	40 U	230	U			•	_ :
SS43 FLUORENE, GC/MS	UG/KG:21	IO U	210	U				. :
SS44 NITROANILINE,4-	.UG/KG:17	700 U	1700	U		,	·	. :

	COMPOUND	UNITS	103	104		108 F			
S S 4 5	PHENOL,4,6-DINITRO-2-METHYL	UG/KG:64	0 u	620	U	:	:	:	- : - :
s s 4 6	N-NITROSODIPHENYLANINE, BY GC/MS	UG/KG:54	U	52	U	:			:
S S 4 7	ETHER, 4-BRONOPHENYL PHENYL	UG/KG:24	0 U	230	U	:			:
s s 4 8	HEXACHLOROBENZENE, BY GC/HS	UG/KG:21	0 u	210	u	:			:
s s 4 9	PENTACHLOROPHENOL, BY GC/MS	:UG/KG:56	i0 u	540	U	:	:		
s s 5 0	PHENANTHRENE, BY GC/MS	UG/KG 21	O U	210	U	;	:		- -:
s s 5 1	ANTHRACENE, BY GC/MS	UG/KG:29	o u	280	Ū	:	:		_ : _ :
s s 5 2	PHTHALATE, DI-N-BUTYL-, BY GC/MS	UG/KG:35	0 u	340	υ				_ :
s s 5 3	FLUORANTHENE, BY GC/MS	UG/KG:11	0 u	100	U	:			_ :
S S 5 4	PYRENE, BY GC/MS	UG/KG:32	.0 u	310	u	:		:	
s s 5 5	PHTHALATE, BUTYL BENZYL	UG/KG:29	0 u	280	U	:	:	:	
s s 5 6	DICHLOROBENZIDINE, 3,3'	UG/KG:54	00 u	5200	u	:			:
s s 5 7	ANTHRACENE, BENZO(A), BY GC/MS	UG/KG:40	00 u	390	ū	:	:	:	_ :
s s 5 8	PHTHALATE, BIS(2-ETHYLHEXYL), BY GC/MS	UG/KG:48	10 u	470	ū	:			- - -
s s 5 9	CHRYSENE, BY GC/MS	UG/KG:32	20 u	310	u	:	:		_ _ :
\$ \$ 6 0	PHTHALATE, DI-N-OCTYL-, BY GC/MS	UG/KG:19	0 u	180	U	:			
s s 6 1	FLUORANTHENE, BENZO(B), BY GC/MS	UG/KG:19	o u	180	U	:	:	:	_ _:
3 S 6 2	FLUORANTHENE, BENZO(K), BY GC/MS	ug/kg:35	o u	340	υ	:		:	_ : _ :
i s 6 3	PYRENE, BENZO(A), BY GC/MS	.ug/kg:40	10 u	390	ับ	:	:	: :	_ :
3564	PYRENE, INDENO(1,2,3-CD)	.UG/KG:56	60 u	540	u	:	:	:	_ _
3865	ANTHRACENE, DIBENZO(A,H), BY GC/HS	UG/KG:56	.o u	540	U	:		:	_ :
:566	PERYLENE, BENZO(G, H, I), BY GC/MS	UG/KG:38	io u	360	U	:		:	_ :
:003	CHLOROMETHANE, BY GC/MS	UG/KG:12	U	12	v	10 U		: :	_ :
:V04	BROMOMETHANE, BY GC/MS	UG/KG:24	u	24	υ	20 U		;	- : - :
·V05	VINYL CHLORIDE, BY GC/MS	UG/KG:18	υ	18	U	15 U		-	:
V06	CHLOROETHANE, BY GC/MS	UG/KG:18	U	18	U	: 15 U			:
		::		-:		:	::		- :

							•	
COMPOUND	UNITS	103	104		108 F			
SVO7 METHYLENE CHLORIDE (DICHLOROMETHANE)	UG/KG 12	U	12 U	: 1	10 U :			:
SVO8 DICHLOROETHYLENE,1,1, BY GC/MS	UG/KG:6	U	6 U	: 5	ง บ			:
SVO9 DICHLOROETHANE,1,1, BY GC/MS	:UG/KG:6	U	6 U	: 5	5 U			:
SV10 DICHLOROETHYLENE, TRANS-1,2	:UG/KG:6	U	6 U	: 5	i U			:
SV11 CHLOROFORM, BY GC/MS	:UG/KG:6	υ	6 U	5	5 U			. :
SV12 DICHLOROETHANE,1,2, BY GC/MS	ug/Kg:6	U	6 U	: 5	5 U			:
SV13 TRICHLOROETHANE, 1, 1, 1-, BY GC/MS	UG/KG:6	U	6 U	: 5	5 U			. :
SV14 CARBON TETRACHLORIDE, BY GC/HS	UG/KG:6	U	6 U	: 5	J U			. :
SV15 BROHODICHLOROMETHANE, BY GC/MS	ug/Kg:6	U	6 U	: 5	S U	·		
SV16 DICHLOROPROPANE,1,2, BY GC/MS	UG/KG:6	U	6 U	: 5	U :			
SV17 BENZENE, BY GC/MS	UG/KG:6	U	6 U	: 5	u :	· ·		. :
SV18 DICHLOROPROPYLENE, TRANS-1,3	UG/KG:6	U	6 U	: 5	5 U		·	. :
SV19 TRICHLOROETHYLENE, BY GC/MS	UG/KG:6	U	6 U	: 5	S U			. :
SV20 DICHLOROPROPYLENE, CIS-1,3, BY GC/MS	UG/KG:6	U	6 U	: 5	5 U		·	. :
SV21 DIBROHOCHLOROMETHANE, BY GC/HS	UG/KG:6	U	6 U	5	5 U		·	. :
SV22 TRICHLOROETHANE,1,1,2-, BY GC/MS	UG/KG:6	U	6 U	5	S U		·	. :
SV24 BRONOFORM, BY GC/MS	UG/KG:6	U	6 U	5	5 U		·	. :
SV25 TETRACHLOROETHYLENE, BY GC/HS	UG/KG:6	U	6 U	: 5	5 U		· ·	. :
SV26 TOLUENE, BY GC/MS	.ug/kg:6	U	. 6 U	: 5	5 U		: ·	. :
SV27 TETRACHLOROETHANE,1,1,2,2, BY GC/HS	UG/KG:6	U	6 U	. : 5	5 U			. :
SV28 CHLOROBENZENE, BY GC/MS	UG/KG:6	U	6 U	. : 5	5 U	·		. :
SV29 ETHYL BENZENE, BY GC/MS	:UG/KG:6	U	6 U	. : 5	5 U	~		
SV30 ACETONE, BY GC/MS	:UG/KG:18		17	. : 5	580			. :
SV31 CARBON DISULFIDE, BY GC/MS	UG/KG:6	U	6 U	: 5	5 U	·		. :
SV32 METHYL ETHYL KETONE	.UG/KG:12	U	. 12 U	2	28			. :
SV34 HEXANONE, 2-	UG/KG:12	U	12 U	: 1	10 U			
• • • • • • • • • • • • • • • • • • • •	 :			•				•

VALIDATED DATA

ANALYSIS REQUEST DETAIL REPORT ACTIVITY: 6-DC1CY

COMPOUND	UNITS	103		104		108 F			
;V35 4-METHYL-2-PENTANONE(MIBK)	: ug/kg	12	: U	12	u	10	:	:	- : :
V36 STYRENE, BY GC/MS	UG/KG	i 6	U	6	U	5 ข		:	
V44 DICHLOROBENZENE,1,4-	:UG/KG	6	U	6	U	26		:	:
1749 XYLENE, ORTHO	UG/KG	i:6	U	6	U	5 U	:	:	:
SV57 XYLENE, M AND/OR P	UG/KG	12	U	12	U	5 U		:	_
V60 DICHLOROBENZENE, 1, 3-	UG/KG	6	U	6	U	27		:	
V61 DICHLOROBENZENE, 1, 2-	UG/KG	: 6	U	6	U	11		:	_ :
3V63 DICHLOROETHYLENE, CIS ~1,2	UG/KG	6	U	6	υ	5 U		:	.:
ZO1 SAMPLE NUMBER	NA	103		104		108		:	:
ZOZ ACTIVITY CODE	NA .	DC1CY		DC1CY		DC1CY		:	_:
	: 		;					•	•

ACTIVITY DC1CY MOUND STREET PCBS

HE PROJECT LEADER SHOULD CIRCLE ONE - STORET, AIRS, OR ARCHIVE.

CIRCLE ONE: STORET AIRS ARCHIVE

DATA APPROVED BY LABO FOR TRANSMISSION TO PROJECT LEADER ON 05/03/96 13:32:27 BY Deval Drewall for

APPENDIX D ILLINOIS-AMERICAN RAW WATER ANALYTICAL DATA

Sverdrup TELECON MEMO

Memo No	Job No. <u>010865-37030</u>	<u>3</u>
Date June 3 1996	Time (0130	<u>a</u> m
Between (SVC) Michael McCordy	Placed	Rec'd
And John Schiermann	Tel (<u>&&)</u>	1873 / 874-0523
Of IL-American Water Company		
Subject Raw water sampling & au	calysis for East	St Louis Cutake
Asked if they monitor intake	For PCBs PAH	A BETX.
· He stated that they used to	monitor the re	w water
SOC analysis of drinking we		
the raw water. The except	ron is they w	ill sample
the raw water after a	spill in the A	(1881881)
River to determine their P. He stated they have collected	1 saw water so	ing treatment
the Chorteau Island intake	after a spill	
not at the East St Louis	mtake.	,
Asked if they have any raw w	cter data with	n the last
four years.		
o He stated the last raw wa conducted in 1992 or 1992	ter sampling wa	s probably
copy of analysis reports h	e finds.	d tax a
Asked what his title is.		
· Water Quality Supervisor		
He called back about 11:30 am	and stated he	found some
analysis reports for 1992 for	PCB and BNI	1. The
reports are attached.		
Original		
Original: cc:	Pag	ge of



ILLINOIS AMERICAN WATER COMPANY EAST SAINT LOUIS FILTER PLANT WATER QUALITY DEPARTMENT **800 NORTH FRONT STREET** EAST SAINT LOUIS, IL. 62201

FAX (618) 874-0948

FAX TRANSMISSION COVER SHEET

DATE: 6-3-96 TIME: 11:30 AM CST
PLEASE DELLIVER TO:
NAME: Mike McCurdy COMPANY: Sverdrup Environmental FAX NUMBER: (913) 663-1668
COMPANY: Sverdrup Environmental
FAX NUMBER: (9/3) 66'3-1668
FROM: John Schiermann DEPT. Water Quality
PHONE NUMBER: (618) 874-0523
TOTAL NUMBER OF PAGES INCLUDING COVER LETTER:
COMMENTS:
Per your request.
THANK YOU:
20
FAXED BY:

CHEMICAL ANALYSIS REPORT ACID/BASE EXTRACTABLES

: YMAGMOS

ILLINOIS AMERICAN WATER CO

LAB CERTIFICATION:

IL-100203

EAST ST. LOUIS DISTRICT

PWSID:

COUNTY: ST. CLAIR

8080 STATE STREET

IL 62202

E. ST. LOUIS

C. BLANCK cc:

CC: cc:

cc:

SAMPLE INFORMATION

SA	MPLE#	TYPE
92	3540	RAW

LOCA:	rion		
L.S.	STATION	MISS	RV

DATE	TI
73/23/92	1000

ME SAMPLER HRS ASBERRY

NEXACHLOROETHANE	BASE EXTRACTABLES EPA METHOD 625	RESULT (mg/L)	BASE EXTRACTABLES EPA METHOD 625	RESULT
Dis(2-CHLOROETHYL)ETHER	5.7. N.2.11.05			1- 4 1 -7
1,2-DICHLOROBENZENE	HEXACHLOROETHANE	<0.001	4-BROMOPHENYL PHENYL ETHER	<0.001
bis(2-CHLOROISOPROPYL)ETHER <0.001	bis(2-chlorgethyl)ETHER	<0,001	PHENANTHRENE	<0.001
M-NITROSO-di-n-PROPYLAMINE	1,2-DICHLOROSENZENE	<0.001	ANTHRACENE	<0.001
NITROBENZENE	bis(2-CHLORGISOPROPYL)ETHER	<0.001	Di-m-BUTYLPHTHALATE	<0.001
HEXACHLOROSUTADIENE	N-NITROSO-di-n-PROPYLAMINE	<0.001	FLUORANTHENE	<0.001
1,2,6-TRICHLOROBENZENE	NITROBENZENE	<0.001	PYRENE	<0.001
ISOPHORONE	HEXACHLOROSUTAD LENE	<0.001	BENZIDINE	<0.007
MAPHTHALENE	1,2,4-TRICHLOROBENZENE	<0.001	BUTYLBENZYL PHTHALATE	<0.002
bis(2-chloroethoxyl)methane 40.001 Berzo(a)anthracene 40.002 hexachlorocyclopentadiene 40.001 3,3-dichlorobemzidine 40.002 2-chloronaphthalane 40.001 Di-n-Octyl Phthalate 40.002 Acenaphthene 40.001 Berzo(b)fluoranthene 40.002 Acenaphthene 40.001 Berzo(a)Pyrene 40.002 Dimethylphthalate 40.001 Berzo(a)Pyrene 40.002 2,6-01NITROTOLUENE 40.001 Indehol(1,2,3-c,d)Pyrene 40.003 4-chlorophenyl Phenyl Ether 40.001 Berzo(a),hjanthracene 40.003 2,4-01NITROTOLUENE 40.001 Benzo(a),pyrene 40.002 2,4-01NITROTOLUENE 40.001 Benzo(a),hjanthracene 40.002 2,4-01NITROTOLUENE 40.001 Benzo(a),hjanthracene 40.002 2,4-01NITROTOLUENE 40.001 Benzo(a),hjanthracene 40.002 1,2-01Phenyl Hydrazine 40.002 Benzo(a),hjanthracene 40.002 1,2-01Phenyl Hydrazine 40.001 Dioxin 40.001 N-NITROSODIPHENYLAMINE 40.001	ISOPHORONE	<0.001	bis(Z-ETHYLHEXYL)PHTHALATE	<0.002
NEXACHLOROCYCLOPENTADIENE	NAPHTHALENE	<0.001	CHRYSENE	<0.002
Z-CNLGRONAPHTHALANE <0.001	bis(2-chloroethoxyl)methane	40.001	Benzo(a) anthracene	<0.002
ACENAPHTHYLENE	HEXACHLOROCYCLOPENTAD I ENE		3,3-DICHLOROBENZIDINE	
ACENAPHTHENE	Z-CNLORONAPHTHALANE	<0.001	• • • • • • • • • • • • • • • • • • • •	
DIMETHYLPHTHALATE	SKEJYKTHQAKEDA	<0.001	•	
2,6-01N1TROTOLUENE <0.001	ACENAPHTHENE	<0.001		
FLUXORENE <0.001	DIMETHYLPHTHALATE	<0.001	, ,	-
4-CHLOROPHENYL PHENYL ETHER	2,6-DINITROTOLUERE	<0.001		
2,4-0 INITROTOLUENE <0.001	FLUORENE	<0.001	• • • •	
1,2-DIPHENYLHYDRAZINE	4-CHLOROPHENYL PHENYL ETHER	₹0.001	Benzo(g,h,i)Perylehe	
DIETHYLPHTHALATE <0.001	2,4-DINITROTOLUENE		.,	
N-NITROSCDIPHENYLAMINE <0.001	1,2-diphenylhydrazine	<0.001		
HEXACHLORBENZENE	DIETHYLPHTHALATE		• • • • • • • • • • • • • • • • • • • •	-
ACID EXTRACTABLES (EPA METHOD 625) 2-CHLOROPHENOL	N-NITROSCO I PHENYLAMINE		*	• • • • •
Z-CHLOROPHENOL <0.002	HEXACHLORBENZENE	<0.001	1,4-DICHLOROSERZENE	<0.001
4-CHLORO-3-METHYLPHENOL <0.002 4-MITROPHENOL <0.005 2,4-DICHLOROPHENOL <0.002 PENTACHLOROPHENOL <0.002 2,4-DINETHYLPHENOL <0.002 PHENOL <0.002 2,4-DINITROPHENOL <0.005 2,4,6-TRICHLOROPHENOL <0.002 2-METHYL-4.6-DINITROPHENOL <0.002	ACID EXTRACTABLES (EPA METHOD	625)	ACID EXTRACTABLES (EPA NETH	00 625)
2,4-DICHLOROPHENOL <0.002	Z-CHLOROPHENOL	<0.002	2-NITROPHENOL	<0.002
2,4-D1METHYLPHENOL <0.002 PHENOL <0.002 2,4-D1N1TROPHENOL <0.005 2,4,6-TRICHLOROPHENOL <0.002 2-METHYL-4.6-DIN1TROPHENOL <0.002	4-CHLORO-3-METHYLPHENOL	<0.002	4-NITROPHENOL	<0.005
2,4-DINITROPHENOL <0.005 2,4,6-TRICHLOROPHENOL <0.002 2-METHYL-4.6-DINITROPHENOL <0.002	2,4-DICHLOROPHENOL	<0.002	PENTACHLOROPHENOL	<0.002
Z-METHYL-4.6-DINITROPHENCL <0.00Z	2,4-DIMETHYLPHENOL	<0.002	PHENOL ,	<0.002
2-methyl-4,6-dinitrophenol <0.002	2,4-DINITROPHENOL	<0.005	2,4,6-TRICHLOROPHENOL	<0.002
	2-methyl-4,6-dinitrophenol	<0.002		

DATE SAMPLE REC'D: 03/23/92

ANALYST: HK

S OF AMALYSES:

BASE:05/07/92 ACID:05/06/92

05/11/92

COLLINS, DIRECTOR

DATE

MERICAN WATER WORKS SERVICE COMPANY, INC. WALITY CONTROL & RESEARCH LABORATORY 1115 SOUTH ILLINOIS STREET SELLEVILLE, IL 62220*(618)235-3600

RECEIVED. MAY 1 4 1992

CHEMICAL ANALYSIS REPORT PESTICIDES/HERBICIDES PAGE 1 OF 2

ILLINOIS AMERICAN WATER CO EAST ST. LOUIS DISTRICT 8080 STATE STREET COMPANY:

LAB CERTIFICATION: IL-100203

PWS ID:

COUNTY: ST. CLAIR

E. ST. LOUIS

cc: K. TSIKTERIS cc: C. BLANCK

CC:

CC:

SAMPLE INFORMATION

Sample#	TYPE	SAMPLE LOCATION	DATE	TIME	SAMPLER
92 3548	RAW	L.S. STATION MISS RV	03/23/92	1000 HRS	ASBERRY

IL 62202

PESTICIDE EPA METHOD 508	MCL (mg/L)	RESULT (mg/L)	PESTICIDE EPA METHOD 508	MCL (mg/L)	RESULT (mg/L)	PESTICIDE EPA METHOD 508	RESUL1	-
LINDANE ENDRIN METHOXYCHLOR TOXAPHENE ALDRIN REMEFIN BUTACHLOR CHLORDANE CHLOROTHALONIL	0.004 0.0002 0.1 0.005	<0.0001 <0.0001 <0.0001 <0.001 <0.0007 <0.001 <0.001 <0.001 <0.001 <0.001	DIELDRIN HCP HEPTACHLOR HEPTACHLOR EPOXIDE HEXACHLOROSENZENE METHYLPARATHION METOLACHLOR		<0.00002 <0.00013 <0.0002 <0.0001 <0.0001 <0.0001 <0.0002	NITRALIN PCNB PROPACHLOR PROPAHIL P,P'-DDD P,P'-DDE P,P'-DDT	<0.01 <0.0001 <0.01 <0.0000 <0.0000 <0.0000)1 31
 HERBICIDE EPA METHOD 515	MCL (mg/L)	RESULT (mg/L)	HERBICIDE EPA METHOD 515	MCL (mg/L)	RESULT (mg/L)	HERBICIDE EPA METHOD 515	RESULY (mg/L)	
2,4-D 2,4,5,-TP (SILVEX)	0.1	<0.001 <0.00002	DALAPON DINOSEB		<0.001 <0.0001	PENTACHLOROPHENOL PICLORAM	<0.0000 <0.0001	
PCB's EPA METHOD 508	MCL (mg/L)	RESULT (mg/L)	PCB'S EPA METHOD 508	MCL (mg/L)	RESULT (mg/L)	PCB's EPA METHOO 508	MCL (mg/L)	RESULT (mg/l)
PCB 1016 PCB 1221 PCB 1232		<0.0005 <0.0005 <0.0005	PCB 1242 PCB 1248 PCB 1254		<0.0005 <0.0005 <0.0005	PCB 1262	-	<0.0005 <0.0005

Date Sample Rec'd: 03/23/92

Anglyst: (Pesticides) DW

Date of Analysis: 04/09/92

(Merbicides) DW

05/04/92

(PCB's)

04/09/92

DV

DAVID W. COLLINS, DIRECTOR

05/14/92

DATE

AMERICAN WATER WORKS SERVICE COMPANY, INC. JALITY CONTROL & RESEARCH LABORATORY -1115 SOUTH ILLINOIS STREET BELLEVILLE, ILLINOIS 62220*(618)235-3600



Chemical Analysis Report American Water Works Service Company, Inc.

ACID/BASE EXTRACTABLES

COMPANY:

ILLINOIS AMERICAN WATER CO

LAB CERTIFICATION:

IL-100203

EAST ST. LOUIS DISTRICT

PWSID:

8080 STATE STREET

COUNTY:

ST. CLAIR

E. ST. LOUIS

IL 62202

cc: cc:

K. TSIKTERIS C. BLANCK

cc: CC:

SAMPLE INFORMATION

LOCATION TYPE SAMPLE# LOW SERVICE 9212580 RAW

09/22/92

TIME 0926

SAMPLER HRS SCHIERMANN

BASE EXTRACTABLES	RESULT	BASE EXTRACTABLES	RESULT
EPA METHOD 625	(mg/L)	EPA METHOD 625	(mg/L)
HEXACHLOROETHANE	<0.001	4-BROMOPHENYL PHENYL ETHER	<0.001
bis(Z-CHEOROETHYL)ETHER	<0.001	PHENANTHRENE .	<0.001
1,2-DICHLOROBENZENE	<0.001	ANTHRACENE	<0.001
bis(2-CHLOROISOPROPYL)ETHER	<0.001	Di-n-BUTYLPHTHALATE	<0.001
N-HITROSO-di-n-PROPYLANINE	<0.001	FLUORANTHENE .	<0.001
NITROBENZENE	<0.001	PYRENE	<0.001
MEXACHLOROBUTAD LENE	<0.001	BENZIDINE	<0.007
1,2,4-TRICHLOROBENZENE	<0.001	SUTYLBENZYL PHTHALATE	<0.002
ISOPHORONE	<0.001	bis(2-ethylhexyl)Phthalate	<0.002
NAPHTHALENE	<0.001	CHRYSENE	<0.002
bis(Z-CHLOROETHOXYL)HETHANE	<0.001	SENZO(3)ANTHRACEXE	<0.002
HEXACHLOROCYCLOPENTAD I ENE	<0.001	3,3-DICHLOROBENZIDINE	<0.002
Z-CHLORONAPHTHALAHE	<0.001	DI-n-OCTYL PHIKALATE	<0.002
ACENAPHTHYLENE	<0.001	BENZO(b) FLUORANTHENE	<0.002
ACENAPHTHENE	<0.001	BENZO(k) FLUORANTHENE	<0.00Z
DIMETRYLPRTHALATE	<0.001	BENZO(a)PYRENE	<0.002
2,6-DINITROTOLUENE	<0.001	INDENOL(1,2,3-c,d)PYRENE	<0.003
FLUORENE	<0.001	DIBENZO(a,h)ANTHRACENE	<0.003
4-CHLOROPHENYL PHENYL ETHER	<0.001	BENZO(g,h,i)PERYLEKE	<0.00Z
2,4-DINITROTOLUENE	<0.001	N-NITROSODINETHYLAMINE	<0.002
1,2-DIPHENYLHYDRAZINE	<0.001	bis(CHLOROMETHYL)ETHER	<0.001
DIETHYLPHTHALATE	<0.001	DIOXIN	<0.010
N-KITROSODIPHENYLAMINE	<0.001	1,3-dichlorobenzene	<0.001
HEXACHLORBENZENE	<0.001	1,4-dichlorobenzene	<0.001
ACID EXTRACTABLES (EPA METHOD	625)	ACID EXTRACTABLES (EPA HETH	00 6253
2-CHLOROPHENOL	<0.002	2-NITROPHENOL	<0.002

2-METHYL-4,6-DINITROPHENOL DATE SAMPLE REC'D: 09/22/92

4-CHLORO-3-METHYLPHENOL

Z_4-DICHLOROPHENOL

2,4-DIMETHYLPHENOL

2,4-DINITROPHENOL

AHALYST; NK

<0,002

<0.002

<0.002

<0.005

<0.002

DATES OF ANALYSES:

BASE: 10/22/92 ACID:10/21/92

<0.005

<0.002

<0.002

<0.002

10/23/92

4-WITROPHENOL

PENTACHLOROPHENOL

2,4,6-TRICHLOROPHENOL

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CHEMICAL ANALYSIS REPORT PESTICIDES/HERBICIDES PAGE 1 OF 2

NOV 1 1991

LAB CERTIFICATION: IL-100203

PWS ID:

COUNTY:

ILLINOIS-AMERICAN WATER COMPANY COMPANY:

EAST ST. LOUIS DISTRICT 8080 STATE STREET

E. ST. LOUIS

IL 62202

cc: C. BLANCK

cc:

cc:

CC:

SAMPLE INFORMATION

SAMPLE LOCATION SAMPLE# TYPE 91 9709 RAW MISSISSIPPI LOW SERV

DATE 09/27/91

TIME SAMPLER 0945 HRS LOWRY

PESTICIDE EPA METHOD 508	MCL (mg/L)	RESULT (mg/L)	PESTICIDE EPA NETHOO 508	MCL (mg/L)	RESULT (mg/L)	PESTICIDE EPA METHOD 508	RESULT (mg/L)
							
LINDANE	8.004	<0.0001	BUTACHLOR		<0.01	METHYLPARATHION	⋖0.01
ENDRIN	6,9002	<0.0001	CHLORDANE		<0.001	METGLACHICA	<0.000Z
METHOXYCHLOR	0.1	≪3.001	DIAZINON		40. 01	MITRALIM	€0.01
TOXAPHENE	0.005	<0.001	DI SUL FOTON		€0.01	PARATHICK	≪0.01
ALACHLOR		<0.001	NEPTACHLOR		<0.0002	PCNB	<0.0001
BENEFIN		<0.001	HEPTACHLOREPOXIDE		40.0001 `	PHORATE	≪0.01
			HEXACIT, OROĐENZENE		<0.0001	PROPACHLOR	<0.01
			MALATHICH		≪0.01	PROPANIL	<0.01

HERBICIDE	MCL	RESULT
EPA METHOD 515	(mg/L)	(mg/L)
2,4-0	0,1	<0.001
~ 2.4.5TP (SILVEX)	0.01	<0.00002

PCB'S EPA METHOD SOS	MCL (mg/L)	RESULT (mg/L)	PCB's EPA METHOD 508	MCL (mg/L)	RESULT (#g/L)	PCB's EPA METHOD 508	HCL (mg/L)	RESULT (mg/L)
			-	-			-	
PCB 1016	•	<0.0005	PCB 1242		≪0.0005	PCB 1260		≪3.0005
PC8 1221		<0.0005	PCB 1248		<0.0005	PCB 1262		<0.0005
pcs 1232		<0.0005	PCR 1254		<0.0005	·		

Date Sample Rec'd: 09/27/91

Analyst: (Pesticides) (Merbicides)

DW DV Date of Analysis: 10/04/91

10/16/91

(PCB's) DV 10/04/91

DAVID W. COLLINS, DIRECTOR

10/29/91

DATE

AMERICAN WATER WORKS SERVICE COMPANY, INC. QUALITY CONTROL & RESEARCH LABORATORY "155 SOUTH ILLINOIS STREET ZLLEVILLE, ILLINOIS 62220°(618)235-3600

United States
Environmental Protection
Agency

Office of Emergency and Remedial Response Washington DC 20460

EPA 540-R-92-021 Directive 9345.1-05 September 1992

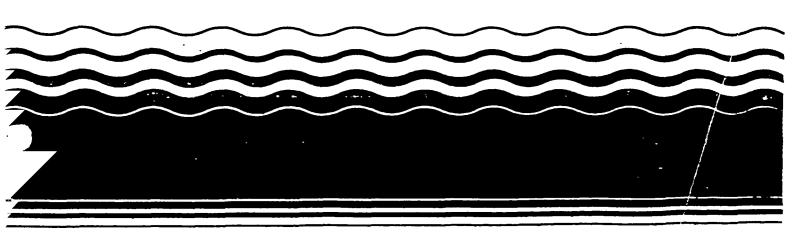
Superfund

\$EPA

Guidance for Performing Site Inspections Under CERCLA Reference 31

includes revised C-33 C-44

Interim Final



United States Environmental Protection Agency Office of Emergency and Remedial Response Washington, DC 20460 Publication September 1995

Supertuna



Superfund Chemical Data Matrix

Reference 32

Services Division



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7 25 FUNSTON ROAD KANSAS CITY, KANSAS 66115

Sverdrup Environmental, Inc.

May 3 (496

DATE:

SUBJECT: Dat

Data Transmittal for Activity

Site Description:

FROM:

Andrea Jirka, Program Manager 🖊

Regional Laboratory, Environmental/

TO:

Dave Crawford

Attached is the data transmittal for the above-referenced site. The data contained in this transmittal have been approved by the Regional Laboratory. This should be considered a _____ Partial or _____ Complete data transmittal (completes transmittal of ______). The Project Leader should notify the Regional Laboratory with 14 days of any changes in the LAST analytical database. If you have any questions, comments, or data changes, please contact Dee Simmons at 551-5129.

Accacilment

cc: Analytical Data File



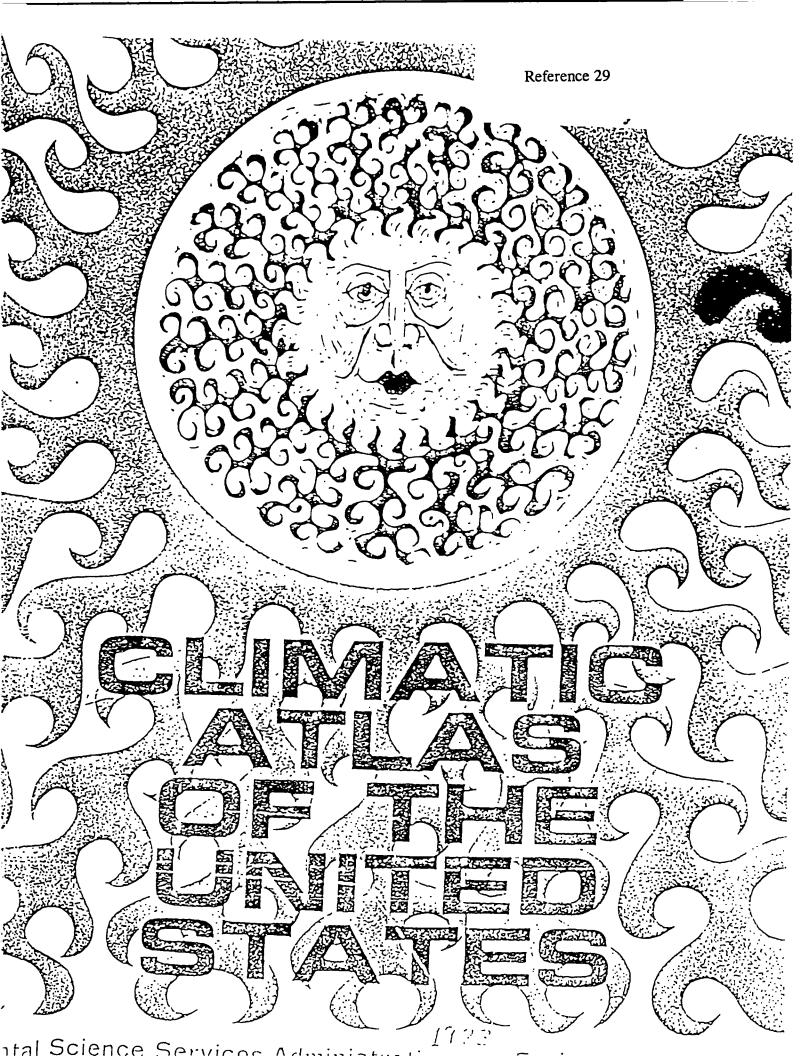


Table 5. Household, Family, and Group Quarters Characteristics: 1990—Con.

_			Fart	nly household	1		Nonfamily	households		Persons	Per —	Persor	ns in group q	variers
State County							Hous	eholder living a	ione					
County Subdivision				Marned-	Female house- holder, no			65 years o	and over				Institu	Other per-
Place	Persons in households	All house- holds	Total	couple family	husband present	Total	Total	Total	Femoie	Household	Family	Total	tionalized persons	daniera dionb
Worth County—Cor-														
Middlefork township	229	89	66	59	5	23	18	13	13	2 57	3.03	_	_	_
Worth town	103	37	27	24	2	l iól	7	5	5	2 78	3 33	_	_	_
Smith township	183	81	57	50	6	1 24	22	14	7	2 26	2 70	_	-	_
Allendale town	58	32	16	14	2	1 16	15	- 11	5	181	2 44	_	_	_
Umon township	485	215	146	131	ž	69	65	46	37	2 26	2 80	_	_	_
Sheridan tawn	174	91	49	44	4	42	42	34	28	1 91	2.67	-	-	-
Wright County	16 558	6 510	4 725	4 059	518	1 785	1 679	998	780	2,54	3.06	200	199	
Boone township	893	321	255	227	21	66	58	26	21	2 78	3 20	_	-	
Brush Creek township	510	177	143	127	12	34	32	13	10	2 88	3 26	_	_	_
Clark township	1 061	400	310	261	34	90	86	56	44	2 65	3 09	_	_	_
Norwood city (pt)	389	151	106	86	18	45	43	30	26	2.58	3 19	_	_	_
Elk Creek Iownship	382	155	122	106	9	33	29	14	ĪĪ	2.46	2.80	_	_	
Gasconade township	1 051	381	292	256	26	89	81	46	32	2 76	3.22	_	_	
Hartville city (pt)	108	48	29	23	Š	19	17	12	9	2 25	3 00	_	_	
Hart township	1 061	452	292	256	28	160	154	111	87	2 35	3 03	7	7	
Hartville city (pt)	380	206	. 93	70	18	113	112	86	68	184	2 83	, ż	,	
Montgomery township	533	189	154	134	15	35	34	16	12	2.82	3 14	· <u>-</u>		_
Mountain Grove township	5 569	2 382	1 575	1 292	236	807	767	466	376	2 34	2 95	129	129	_
Mountain Grove city (pt)	4 141	1 860	1 158	916	208	702	667	416	341	2 23	2 89	27	27	
Norwood city (pt)	60	26	17	15	- 1	Ö	9	4	3	2 31	300	' <u>'</u>	•	
Pleasant Valley township	2 638	เด๋าัโ	730	619	94	281	258	156	120	2 61	3.15	64	63	ī
Mansfield city	1 428	587	376	298	70	211	194	125	103	2.43	3 14	1	- 03	i
Union township	1 045	393	314	285	19	79	77	46	36	2 66	3 04			<u>.</u>
Van Buren township	550	194	154	144	'5	40	37	16	12	2.84	3 25			_
Wood township	1 265	455	384	352	19	71	66	32	19	2 78	3.03	_	_	_
Mountain Grove city (pt.)	. 103	751	35	331		' <u>'</u>		-	· <u>·</u>	7.00	7.00			
it. Louis city	385 916	164 931	90 945	50 557	33 864	73 986	64 677	26 519	20 788	2 34	3.21	10 769	5 900	4 869

Table 5. Household, Family, and Group Quarters Characteristics: 1990—Con.

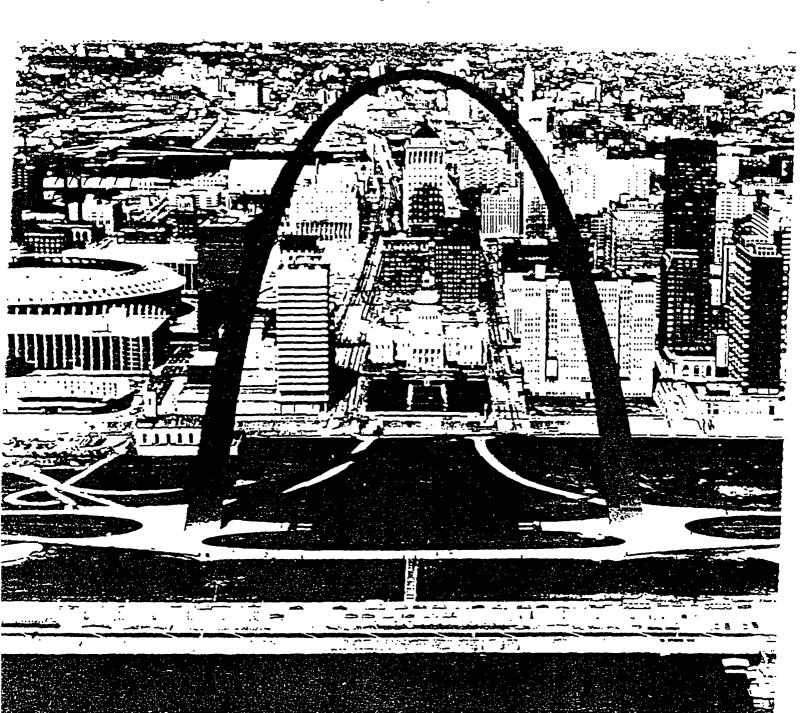
[For definitions of terms and meanings of symbols, see text]

			Fan	nily household:	:		Nonfamily	households		Persons	per —	Person	is in group q	norters
State County							House	eholder living	pione				_	
County Subdivision Place	Persons in	All house-		Married- couple	Female house- holder, no husband			65 years	and over				Institu- tionolized	Other per- sons in group
	households	holds	Total	family	present	Total	Total	Total	Female	Household	Family	Total	persons	dnotters
St. Charles County—Con Zumbehl township St. Charles city (pt.)	11 415 7 947	4 480 3 359	3 000 2 048	2 489 1 679	382 271	1 480 1 311	1 219 1 092	232 203	185 160	2 55 2 37	3 17 3 08	181 181	170 170	11 11
St. Peters city (pt)	8 267	1 3 499	1 2 441	1 2 148	222	1 058	986	608	- 478	4 00 2.36	4.00 2.88	190	190	-
Appleton City city	1 516 1 212	666 562	419 331	364 281	49	247 231	232	155 147	130 124	2.28 2.16	2 96 2 89	68 68	68 68	-
Butler township	1 249 627	547 297	363 172	306 132	41 32	184 125	167	114 9 <u>3</u>	93 79	2.28 2 11	2 81 2 75	96 96	96 96	-
Center township	203 150	77 58	60 44	51 38	3 4	17 14	15 12	7	3 5	2.64 2.59	2.98 3 02	_	=	-
Collins village	604 144	236 60	182 39	156 30	22	54 21	50 21	28 17	25 16	2 56 2.40	2.98 3 13	-	=	-
Dallas township	326 40	129 16	102	94 9	4	27	25 6	12	10	2.53 2.50	2.88 3 30	Ξ	-	=
Vista village	496 50	203 24	149 17	139 17	8 -	54 7	52 7	28	18	2 44 2 08	2 94 2.53	_	Ξ	Ξ
Jackson township	260 285	114 106	80 85	76 80	3	34 21	30 19	17	10	2 28 2.69	2 75 3.07	-	=	=
Osceolo township	204 1 403	80 650	62 403	56 335	57	18 247	238 238	153	118	2 55 2.16	2.94 2.81	26	26	Ξ
Polk township	729 179	387 76	197 59	155 52	40	190 17	187 17	127	101 7	1 88 2.36	2.68 2.73	26	26 -	=
Roscoe village	503 100	211 46	162 32	147 28	10	49 14	47 14	27 7	18	2 38 2.17	2 75 2 56	_	=	_
Speedwell township Taber township	437 212	177 78	137 59	127 56	7	40 19	35 19	18 11	13 7	2 47 2 72	2.80 3 27	=	Ξ	Ξ
Washington township	240	91	75	71	1	16	12	6	5	2 64	2.87	-	-	-
te, Genevieve County	15 792 1 723 412	5 707 600 174	4 416 465 111	3 878 405 80	374 39 20	1 291 135 63	1 153 119 58	625 69 34	476 50 25	2.77 2 87 2 37	3 21 3 35 3 02	245 49 49	181	64 49 49
St. Mary city Jackson township	2 629	936	747 102	672 92	50 5	189	166	85 28	60 23	2.81 2.49	3,19 3 04		-	-
Bloomsdale city Ste. Genevieve township	353 8 524	3 154	2 375	2 064	230	779	707	392	317	2 70 1 93	3 19	183	181	2
Rocky Ridge willoge (pt) Ste. Genevieve city	56 4 364	1 793	19 1 212	19 989	183 14	10 581 59	536 54	308 30	260 19	2 43 2.85	2.37 3.04 3.21	47	47	=
Saline township Union township Rocky Ridge village (pt.)	887 2 029 306	311 706 127	252 577 93	230 507 83	41	129 34	107 '26	49 9	30	2.63 2.87 2.41	3 18 2 76	13	-	13
. Francois County	45 725	17 670	13 101	10 871	1 788	4 569	4 084	2 225	1 809	2 59	3 04	3 179	2 832	347
Big River township	1 435 2 899	1 105	433 830	379 686	36 117	117 275	88 252	45 161	34 123	2 61 2 62	2 90 3.06	22	!!	11
Iron Mountain Lake city	1 557 632	604 240	441 174	355 141	69 28	163 66	152 60	104 35	83 23	2 58 2 63	3.06 3.11	22	13	11
Uberty township	1 482 1 495	546 537	450 443	409 403	27 27	96 94	93 70	50 23	30 12	2.71 2.78	3 04 3 03		<u>-</u>	_=
Pendleton township	2 255 7 499	823 2 882	654 2 193	565 1 865	64 251	169 689	150 621	84 379	47 310	2.74 2.60	3 10 3 02	83 111	59 100	24 11
Bonne Terre city	3 819	1 474	1 037	819 -	180	437	405	264	228	2.59 -	3 17	52 59	41 59	11
Leadwood city (pt)	8 841	3 297	2 536	2 092	361	761	669	375	310	2 68	3 10	-	-	=
Desloge city (pt.) Elvins city (pt.)	3 714 1 137	1 461 417	1 074 324	88 I 262	155 56	387 93	340 85	185 49	153 39	2 54 2 73	3.01	=	-	=
Flat River city (pt.)	32 1 247	13 448	12 358	11 2 82	62	90	1 84	1 52	45	2.46 2.78	2.58 3 17	Ξ	_	_
Rivermines village (pt.) St Francois township	62 19 819	7 930	20 5 562	16 4 472	905	2 368	2 141	1 108	943	2.58 2.50	2 80 3 03	2 963	2 662	301
Desloge city (pt)	331 254	130	101 68	85 52	13 12	29 26	27 18	8 10	7 8	2.55 2.70	2.95 3 21	105	105	_
Esther cityFarmington city	1 071 8 927	422 3 749	294 2 522	210 2 079	69 378	128 1 227	116	63 610	58 522	2 54 2 38	3 07 2.98	2 671	2 557	114
Flat River city (pt.)	4 717 201	i 871 90	1 286 60	961 44	278 15	585 30	530 29	297 10	258 7	2 52 2 23	3.08 2.73	15	-	15
Rivermines village (pt)	345	120	90	71	12	30	24	14	10	2 88	3.31	52	-	52
Louis County	975 815 33 097	380 110 13 211	270 421 8 751	219 468 5 797	40 657 2 407	109 689 4 460	93 532 3 804	35 078 1 319	28 674 1 046	2.57 2.51	3.10 3.11	17 714 182	12 586 151	5 128 31
Bel-Ridge village (pt.) Berkeley city (pt.)	215 10 213	3 596	2 701	25 1 608	910	8 <u>9</u> 5	769	247	190	3.71 2.84	3 80 3 31	27	16	11
Breckenridge Hills village (pt)	701 883	281 487	203 207	110 130	83 57	78 280	218	13 31	23	2.49 1.81	2 84 2 52	=	=	-
Coal Valley city (pt.)	1 111	429	288	205	65	141	112	43	33	3 00 2 59	5 00 3.18	100	100	-
Kinloch city (pt)	2 451 11 525	788 5 213	554 3 044	167 2 237	348 628	234 2 169	216 1 868	123 632	92 508	3 11 2 21	3 89 2.89	55	35	20
St. John city (pt) Woodson Terrace city	1 591 4 362	1 728	451 1 243	350 960	77 218	165 485	138 418	58 168	143	2 58 2.52	3 04 2 99	=		- -
Des Peres city (pt)	37 258 508	14 934 152	10 452 142	8 788 136	1 330	4 482 10	3 976 8	2 053	1 710	2.49 3.34	3 06 3 46	638	582	56 -
Fentan city (pt.) Glendale city (pt.)	3 290 1	1 103	955	849	74	148	128 1	47	32	2.98 1 00	3 23	56	56 -	=
Kirkwood city Sappington CDP (pt)	27 002 572	11 212 184	7 583 170	6 355 159	987 8	3 629 14	3 205	1 572 5	1 320	2 4 1 3 1 1	3 00 3.20	289 -	239	50
Sunset Hills city (pt)	4 207 33 996	1 744 13 708	1 188 9 848	1 062 8 601	100 968	556 3 860	514 3 400	367 1 499	1 223	2 41 2 48	3.01 2 99	132 891	126 735	6 156
Cloyton city (pt)	7 776 1 666	3 987 601	1 945 513	1 571 480	290 21	2 042 88	1 741	622 28	523 22	1 95 2 77	2 75 3 03	304 309	304 218	91
Crystal Lake Park city Des Peres city (pt)	506 4 676	209 1 671	158 1 412	139 1 278	18 108	51 259	43 229	22 121	20 91	2.42 2.80	2 82 3 09	102	102	-
Frontenac city Glendale city (pt)	3 266 117	1 226 52	1 033 32	953 26	56 5	193	176 15	85 10	67	2 66 2 25	2 94 2.81	108	70	38
Huntleigh city Ladue city (pt)	392 6 990	132 2 651	118 2 166	109 1 987	136	14 485	14 452	10 249	10 209	2 97 2.64	3 16	-	-	-
Pock Hill city (pt.) Town and Country (sty (pt.)	4 260 1 548	1 606	1 167	901 415	205	439	406 72	190	150 28	2 65 3 01	3 21	- 68	11	27
Warson Woods city (pt)	2 049 433	773 154	646	592 52	47 56	127	120	86 22	72 17	2 65 2.81	2 96 3 36	- -	-	-
Westwood village	309	120	103	97	2	26	22	22 5	'; 1	2 40	2 66	-	-	-

Soil survey of

Reference 27

St. Louis County and St. Louis City, Missouri



United States Department of Agric Soil Conservation Service In cooperation with Missouri Agricultural Experiment S

U.S. Department of Commerce Economies and Statistics Administration BUREAU OF THE CENSUS

1990 CPH-1-27

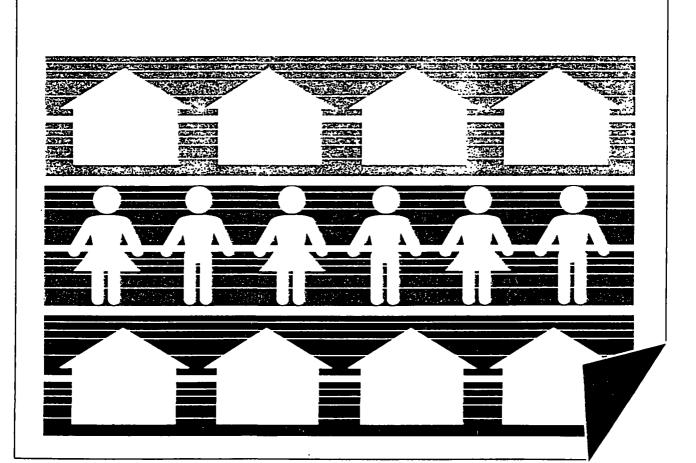
CENSUS'90



1990 Census of Population and Housing Summary Population and Housing Characteristics

Missouri

Reference 28





DEPARTMENT OF THE ARMY ST. LOUIS DISTRICT, CORPS OF ENGINEERS 1222 SPRUCE STREET ST. LOUIS, MISSOURI 63103-2833 27 November 1995



REPLY TO ATTENTION OF:
Engineering Division
Geotechnical Branch

Reference 26

Mr. Mike May Sverdrup Environmental, Inc. 4400 College Blvd., Suite 160 Overland Park, KS 66211

RE: Request for monitoring well maps, analytical data, well installation data, Mound Street PCB site, St. Louis, MO; Sverdrup Project No. 010865-37303

Dear Mr. May:

As you requested, please find enclosed maps of the construction of the St. Louis Floodwall, Reach 3, which contains Mound Street PCB site.

Please note that there are no relief; wells indicated parallel with your site, the nearest wells are located to the north of Mound Street. I have not been able to locate any additional relief well information for the site area. Also, please note that there are a few manholes parallel with your site. These might be mistaken for relief wells. I have enclosed construction details of these manholes.

The sponsor, St. Louis Metropolitan Sewer District, has maintenance responsibility for the relief wells and manholes along the floodwall.

If you require additional information of the St. Louis Floodwall, please call me at (314) 331-8444.

Catherine W. Fox Geology Section

April 4, 1996 10:30 Deliver samples to

EPA at Function Rd

in Kansas City, KS 11:30 Annue EPA Michael WMcCons Michael W Mc Curdy

(5:1) 1345 bars site 1445 arms Sut St Louis office drop off equipment Photo 19 - Sampled area leave SVE St Louis Office 1515 Photo 20 - Sampled area armye SVA overland fork Photo 21 - Sampled area 2015 Photo 22 - Sampled area Flow & MISSISSIPPT RIVER Photo 23 - MSSIESIPPI RIVER Photo 24 - Water utake un IL: Photo 25 - Mississippi River mohael w McGudy 4/3/96 Michael W Mc Cindy

1215 to north wel top of casing 28.54 sample begin 002 upprox. 1.4 gallons removed by purge sample north well 1245 North well water fampleted appears dear no visible suspended switch pumps at north well matter or sedement 110 slight patroleum odor 1335 sampling 001/0010 completea michael W. McCenty Michael W McCin

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1128 South well top of casing 29.58 Ft Photo 15 - South well 601D Photo 16 + South well approximately 1.4 gallons South well removed during pung unq Bow North well visible sedement or Photo 17 - looking toward north well suspended matter slight petroleum odor Photo 18 - Looking toward South well Michael WAL Curdy

(43) 1010 Randy A Mike return with Photo 13 - Equipment for well 1020 top of casing 29.32' casing height 3/25' water level 26,07 bgs Photo 14- Sampling of north well depth 49.31 well casing height 3,25 bottom of well 46,06 bys Nate: : (०५० pumping begin 5. the periotaltic 6.98 0,830 1055 19.5 19,8 0,936 6,95 1106 19,9 0,935 6,98 TAT Engineering 1122 Model 410-460B pump rate is opproximately 0.03 gpm Series A-93 whall whe loudy 4/5/96

(40) (41) 845 Water sample From on truck - pump does not E&E pump to arrive this · 915 Field Blank 003 calibrate YSI meter Michael WMa Curdy 4/8/96 Muchael WMc Lundy

(39) 840 Photo 10 - South of site Photo 11 - fample 104 location Sample 25-27 none 104 Photo 12 - Sample 104 930 landy to hotel to pick Michael WAL-Curdy Michael W Mc Condy

April 3, 1996 peristatic pump work on Ne when physei in 0700 0830 Arrive site Sunny day, 70°F Michael W Mc Curdy

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		Michael	(WMc1 4/2/96	Budy			Mos	all W	Ue Cond	ž.	

pock trucks for lunch Message with Dave Crow bad at EPA * * * Stated only one sample was collected at the hormer 14:10 arrive site boilding location. We were califrate sampling pumps going to more to the vacant area between the Flood well a site to collect the + Stated we had attempted remaining samples, Eguested sample collection at the Dane leane a message on my voice mail at 663-2108, borner building location & were having difficulty collecting samples due to concrete, brick & rock in the subsurface ** (grevious page) Michael WMa Lindy Michael WMo Cindy.

1219 Photo 4 - abandoned area vo sample callected. refusal at 15' Michael WMo Curdy 4/2/96

remeal at 14' refugal at 16' attempt sample 10-12 Sample collected 2-3" in sample collected Mahael Wyla Condy Michael WMalindy

1065 Photo 2 - Sample 10 Knu at 17-19 101 Home Michael WMcCondy Michael WMc ands

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SOKKI∧™

LEVEL BOOK

MOUND STREET PCB ST LOUIS, MO

CERCLIS 10 No. M00000093682

No. 8152-50

Site visit - sample collection April 1,1996 leave SVE Overland Park, KS 1600 range SUE ST Love prekup injugament April 2, 1996 0200 leave Liverpart for site 0730 arme site Sunny day 70° Michael Woll-Cludy Michael W Molindy 4/2/96

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REMEDIAL PLANNING ACTIVITIES AT SELECTED UNCONTROLLED HAZARDOUS SUBSTANCE DISPOSAL SITES IN THE ZONE OF REGIONS VI, VII, AND VIII

U. S. EPA CONTRACT NO. 68-W9-0032

FIELD SAMPLING PLAN

MOUND STREET PCB SITE ST. LOUIS, MISSOURI

Revision 1

Work Assignment No.: 37-7JZZ

March 4, 1996

Prepared for: U.S. Environmental Protection Agency

Prepared by:
Sverdrup Corporation, Inc.
4400 College Boulevard, Suite 160
Overland Park, Kansas 66211

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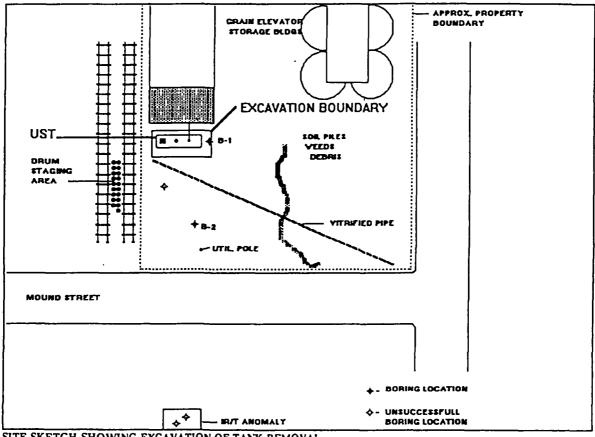
UST CLOSURE REPORT



Terminal Railroad Association

OWNER/FACILITY INFORMATION:

Facility Name:	NONE	UT# N/A	
Address Firs	& Mound Streets		•
County St. Louis	City	St. Louis, MO	Zip Code 63102
Telephone/Contact	(314) 539-4712	Mr. Bob Ripper	
Date of Tank Remov	al Octobe	er 11, 1993	



SITE SKETCH SHOWING EXCAVATION OF TANK REMOVAL.



PROJECT SYNOPSIS

This underground storage tank removal project is a result of the discovery of oils seeping into a pump station operated by Metropolitan Sewer District (MSD) in St. Louis, Missouri. On July 14, 1993, MSD reported this situation to the MDNR. MSD analytical information revealed PCB levels of less than 50 ppm in the oils seeping into the pump station. Additionally, a sample was obtained from waste oil contained in an underground storage tank present in the area, and owned by Terminal Railroad Association of St. Louis (TRRA). The St. Louis Fire Department (SLFD) notified TRRA on July 28, 1993 and requested the contents of the tank be removed. TRRA was unaware of the existence of the tank prior to notification by the SLFD.

In response to the situation, TRRA initiated and completed the following tasks:

- Contents of the tank were removed on August 4, 1993. The tank was completely cleaned and freed of all liquids. The material was containerized onsite in 55 gallon drums for characterization and disposal.
- An Infrared Thermographic Survey was conducted of the area in an attempt to characterize leak plumes or trails.
- Three borings were advanced in the immediate area to determine subsurface soil conditions. Two soil samples were obtained from the site and submitted to a qualified laboratory for chemical analysis.

The results of these efforts are documented in an ACTIVITIES REPORT dated Setember 1, 1993 which documents the response efforts and findings of the investigatory activities.

This UST had no record of registration with the Missouri Department of Natural Resources. TRRA indicated no knowlege of the existence of the tank prior to notification by the SLFD. The UST removal project included removal of the soil overburden, removal of the tank, obtaining samples of the soils below the tank, on the down gradient wall and of the soil pile, disposal of the tank as scrap metal, and backfilling the excavation.

1.0 SAMPLE RESULTS

Soil sampling for this UST removal project included sampling below the tank and the down gradient wall. Additionally, one composite sample of excavated soil was obtained.



	SAMPLE RESULTS SUMMARY TABLE (in ppm)										
I.D	LOCATION	ТРН	BENZENE	TOLUENE	E. BENZENE	XYLENES	PCB's				
PIT	FROM BELOW TANK, 2 COMPOSITE POINTS AT EACH END, OF NATIVE SOIL, 12FT. DEPTH	<5	< 0.002	<0.002	< 0.002	< 0.004	<.05				
DGW	FROM DOWN GRADIENT WALL (EAST WALL), 10.5 FT. DEPTH	< 5	< 0.002	< 0.002	< 0.002	< 0.004	<.05				
SP	FROM FOUR COMPOSITE POINTS OF THE EXCAVATED SOILS	66	< 0.002	0.002	0.002	0.004	<.05				

2.0 LOCATION OF LINES AND UTILITIES

Underground lines or utilities were not discovered in the immediate area during excavation activities. However, an area drawing supplied by TRRA denotes a vitrified pipe extending across the site. (See Sketch Section 5.0)

3.0 FORMER LOCATIONS OF TANK(S)

One 10,000 gallon tank was located at the south end of the eastern most building on the property. The tank overburden consisted of grass and soil. The product line extended north from the tank approximately 10 feet and entered the building through a concrete wall at ground elevation.

4.0 DEPTH & SIZE OF TANK

Tank capacity was 10,000 gallons. Dimensions were 10.5 ft. diameter by 18.5 ft long. The top of the tank was exposed at grade elevation.

GEHM #0119 Page 3



5.0 EXCAVATION BOUNDARIES

The excavation was limited to that necessary for tank removal. This excavation extended approximately 4 feet beyond the outer limits of the tank to a depth of 12 feet. Final dimensions of the tank pit excavation was 16 ft wide, 25 feet long and 12 feet deep.

6.0 ABOVE GROUND TANKS & PIPING

There were no above ground tank systems at this site.

7.0 DISTANCE TO WELLS, STREAMS, AND LAKES.

There were no private drinking water wells, or lakes within .5 miles of the tank location. The site is adjacent to the Mississippi River approximately 1,000 feet to the east.

8.0 SOILS DESCRIPTION

Soils encountererd was black junk fill with cinders to a depth of 12 feet. Below, native soils consisted of typical river sands/silts.

GEHM #0119 Page 4





PHOTO #3:

BOTTOM OF PIT AND EAST END OF EXCAVATION.

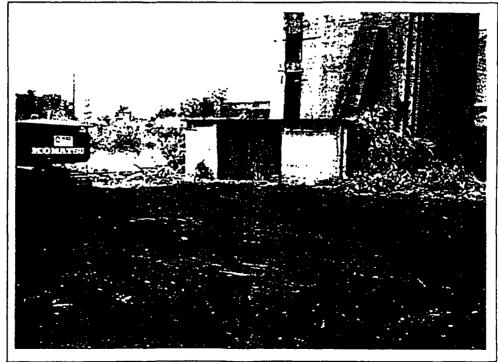


PHOTO #4:

SITE CONDITION AT COMPLETION.



9.0 PHOTOGRAPHS

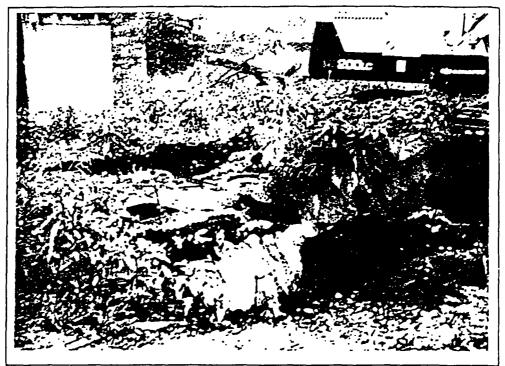


PHOTO #1: NORTH EAST VIEW SHOWING TANK AT BEGINNING OF EXCAVATION.

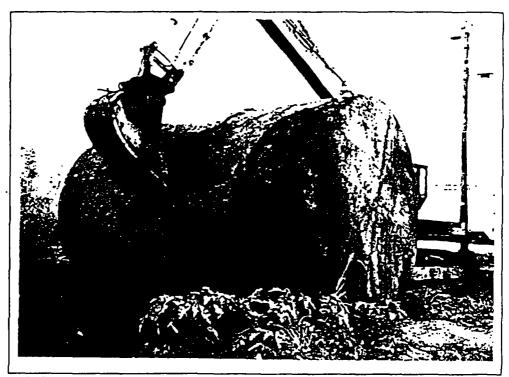


PHOTO #2: BOTTOM AND END OF TANK AFTER REMOVAL.



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11.0 DESCRIPTION OF RESIDUAL CONTAMINATION

Based on odor and appearance, no contaminated media was observed during tank removal operations.

12.0 AMOUNT OF EXCAVATED SOILS

Approximately 30 cubic yards of soil was removed in efforts to remove the tank and affected soils.

13.0 SLUDGE IN TANKS

The tank had previously been emptied of all contents and cleaned. Fifteen drums of Waste Oil/ethylene glycol sludge/liquid was generated for disposal.

15.0 DISPOSAL OF TANK CONTENTS

Tank contents is currently awaiting acceptance for disposal by a licensed and permitted disposal company.

16.0 DISPOSAL OF TANK(S)

The tank was transported to, and disposed of through scrap metal recycling at Grossman Iron & Steel Company, St. Louis, MO.

17.0 FORMER CONTENTS OF TANK(S)

TRRA indicated the tank originally was used to store Fuel Oil.

18.0 DEPTH OF GROUNDWATER

After tank removal, a small amount of water was present in the tank pit area estimated at < 50 gallons. This water was absorbed into the loose soils in the pit during subsequent excavation activities. No other water accumulated or was encountered.

GEHM #0119 Page 7



8600 Kanis Road Little Rock, AR 72204-2322 (501) 224-5060

The Gehm Corporation (C-1270) Post Office Box 65

October 19, 1993

Boonville, MO 65233

ATTN: Mr. Daryl Bowles

Control No. 4528

Sample Description:

Three (3) soil received on 10/13/93

Re: Terminal Railroad Assn. 0119

P.O. No. 101-293 0119

Result:

Parameter	Unit	Pit 10-11-93 <u>1020</u>	DGW 10-11-93 <u>1022</u>	SP 10-11-93 <u>1025</u>
Total Recoverable				
Petroleum Hydrocarbons	mg/Kg	<5 '	<5	66
PCB	mg/Kg	<0.05	<0.05	<0.05
Benzene	mg/Kg	<0.002	<0.002	<0.002
Toluene	mg/Kg	<0.002	<0.002	<0.002
Ethylbenzene	mg/Kg	<0.002	<0.002	<0.002
m- & p-Xylenes	mg/Kg	<0.002	<0.002	<0.002
o-Xylene	mg/Kg	<0.002	<0.002	<0.002

Method:

Modified EPA 418.1, EPA 3550, 8080, 5030A, 8020

Remark:

Results are presented on an as-received basis.

Enclosure: Chain of Custody

AMERICAN INTERPLEX CORPORATION

MWM/tj

Technical Director



TANK WASTE ANALYSIS SUMMARY							
PARAMETER	UNIT	RESULT	METHOD				
IGNITABILITY	of.	Non-ignitable below 212	EPA 1010				
TOTAL HALIDES	mg/Kg	880	EPA 9020				
PCB	mg/Kg	<10	EPA 600/4-81/045				
HEAT CONTENT	ВТИЛЬ	9480	. ; ASTM D240				
TCLP: SILVER ARSENIC BARIUM CADMIUM CHROMIUM MERCURY LEAD SELENIUM	mg/l mg/l mg/l mg/l mg/l mg/l mg/l	<.007 <.02 2.1 .019 .0096 <.01 <.1 <.02	EPA 1311 (FEDERAL REGISTER/VOL. 57, NO. 227/NOVEMBER 24, 1992), 3010A, 6010A, 7470.				

Note: Analysis parameters were selected for the purpose of determining disposal options.

Sixteen drums (approximately 880 gallons) of sludge/liquid, and one drum containing solid debris were generated. The waste was dual phased consisting of 60% ethylene glycol and 40% waste oils (based on appearance).

The tank system was constructed of steel and riveted with the top of the tank at ground surface. An eighteen inch diameter manway centered the tank with a two inch line extending from the tank, above grade, through the wall of the nearby structure. Tank dimensions were 10.5' dia., and 18.5' in length providing a capacity of 12,000 gallons. Tank depth was at 10.5 feet from surface.

4.2 Infrared Thermographic Survey (IR/T).

An Infrared Thermographic Survey was conducted in the immediate area on August 17, 1993 by EnTech Engineering, Inc. Infrared Thermography (IR/T) was selected to be performed at this site due to its ability to provide on-site, real time data. IR/T measures the heat energy emitted from the earths surface stored during daylight hours. Areas of dissimilar chemical or physical make-up (such as petroleum contaminated soils versus non-petroleum contaminated soils) emits stored heat energy at different rates. IR/T is used to identify potential contaminated areas in relation to a known source such as an Underground Storage Tank, Pipeline, etc.

The results of the IR/T investigation for this site did not portray evidence of a leak

ACTIVITIES REPORT TRRA, FIRST STREET SITE, ST. LOUIS, MO SEPTEMBER 1, 1993



PAGE 4

3.0 SITE DESCRIPTION

The parcel of property identified as TRRA property and where the UST exists, measures approximately 150 ft. by 340 ft. The property is generally situated in a north-south direction between the ends of Mound and Brooklyn Streets, St. Louis County, St. Louis, Missouri. Two structures are on the property which appear to be abandoned grain elevator and storage/handling structures constructed of reinforced concrete. The larger of the two structures measures approximately 40 ft. by 160 ft. and is situated along the east side of the property. The smaller structure measures approximately 20 ft. by 170 ft., is situated along the west side of the property with the UST located at the south end. A railroad siding runs adjacent to this smaller structure as well.

4.0 SITE ACTIVITIES

The purpose of the site activities was twofold. First was in response to the requests of the SLFD assuming the tank as the most likely source of the contaminants entering the MSD pump station, and secondly, to assess the most likely migratory pathway of the contaminants for the purpose of determining the most effective abatement measures.

4.1 Tank Contents Removal.

On August 4, 1993, field personnel were mobilized to the site to conduct removal of the tank contents and cleaning of the tank. This procedure was accomplished by Environmental Operations, St. Louis, Missouri. A vacuum truck was used to pump material from the tank then placed in 55 gallon drums, staged on site. The tank was entered, following Confined Space Entry Procedures to remove and clean the remaining product and debris. Samples of the waste were obtained and submitted to American Interplex Corporation for analyses and summarized in the following table.

GEHM # 0116



Groundwater was encountered on the site at a depth of 8 to 8.5 feet from surface. However, site activities were conducted one day following the crest of the Mississippi River on August 1, 1993. Evidence of extreme hydrostatic pressure in the area was observed by water shooting approximately 10 feet high from a Corps of Engineers piezometer located adjacent to the flood wall (approximately 400 feet from the UST), and by a groundwater/surface interface along the area between the eastern most road and the railroad tracks (see Figure 1). Observations of this interface revealed an apparent petroleum sheen present in many areas where the groundwater was seeping from the

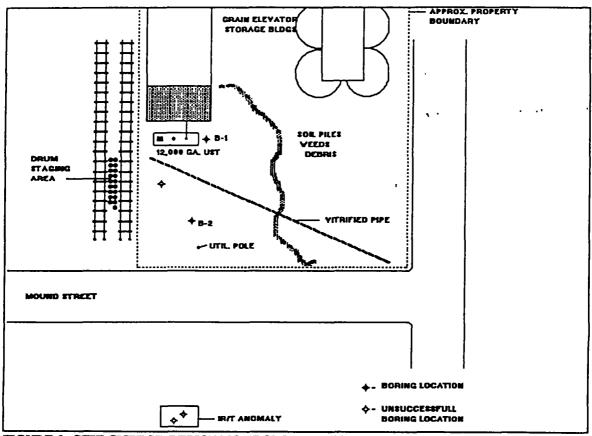


FIGURE 2: SITE SKETCH DEPICTING PROMINENT FEATURES. (APPROX. SCALE: 1"=200')

interface. A sheen was observed in an area extending from a line approximately even with the south side of the TRRA property, south to a line approximately even with the south side of the former Union Electric property.

GEHM # 0116 PAGE 3



(>500,000 gallon capacity) above ground storage tank systems.

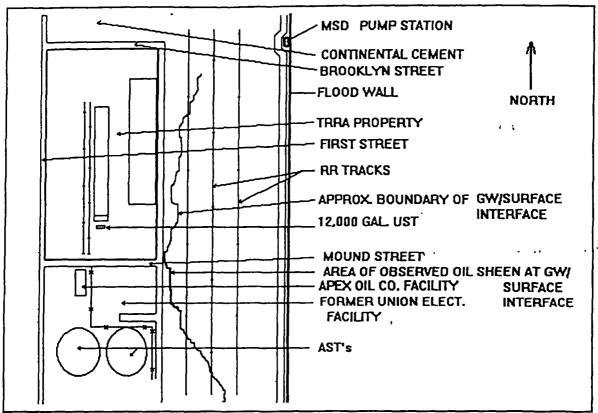


FIGURE 1: AREA SKETCH SHOWING PROPERTY AND SURROUNDING PROPERTIES. (APPROX. SCALE: 1"=180')

Numerous combined sewer, water and other utilities exist (some abandoned) throughout the area which were not completely defined for this report. Utilities which were obvious from site observations and from conversations with MSD personnel included a sewer line adjacent to the TRRA property along Mound Street, and a main line extending west from the pump station. Several underground utility lines run parallel to the railroad tracks and flood wall in a north - south direction. A TRRA property drawing identified a vitrified pipe drain traversing the site from approximately the tank location to the southeast corner of the property (copy provided in attachments). No attempts were made intrusively to locate and verify the existence of this pipe, however, IR/T did not provide a signature typical of an underground conduit acting as a migratory pathway.

A slight gradient (approx. 1:20) typifies the immediate area from west to east.

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1.0 PROJECT SYNOPSIS	1
2.0 DESCRIPTION OF SURROUNDING PROPERTIES	1
3.0 SITE DESCRIPTION	2
4.0 SITE ACTIVITIES 4.1 Tank Contents Removal 4.2 Infrared Thermographic Survey 4.3 Drilling/Sampling	3 3 4 · · ·
5.0 SUMMARY DISCUSSION	7
LIST OF ATTACHMENTS:	
Copy of TRRA Area Drawing Laboratory Reports Boring Logs	

ACTIVITIES REPORT TRRA of St. Louis First & Mound Streets Site MDNR SPILL REPORT # 07143 - KB -1331



1.0 PROJECT SYNOPSIS

This is a report of activities and findings resulting from the discovery of oils seeping into a pump station operated by Metropolitan Sewer District (MSD) in St. Louis, Missouri. On July 14, 1993, MSD reported this situation to the MDNR. MSD analytical information revealed PCB levels of less than 50 ppm in the oils seeping into the pump station. Additionally, a sample was obtained from waste oil contained in an underground storage tank present in the area, and owned by Terminal Railroad Association of St. Louis (TRRA). The St. Louis Fire Department (SLFD) notified TRRA on July 28, 1993 and requested the contents of the tank be removed. TRRA was unaware of the existence of the tank prior to notification by the SLFD.

In response to the situation, TRRA initiated and completed the following tasks: ...

- Contents of the tank were removed on August 4, 1993. The tank was completely cleaned and freed of all liquids. The material was containerized on-site in 55 gallon drums for characterization and disposal.
- An Infrared Thermographic Survey was conducted of the area in an attempt to characterize leak plumes or trails.
- Three borings were advanced in the immediate area to determine subsurface soil conditions. Two soil samples were obtained from the site and submitted to a qualified laboratory for chemical analysis.

This report documents the response efforts and findings of the investigatory activities.

2.0 DESCRIPTION OF SURROUNDING PROPERTIES

The property is bordered by gravel roads on the north, east, and south sides. To the west is a gravel covered area containing truck scales and operated by Apex Oil Co. Across the road (Mound Street), and to the south is an empty lot formerly occupied by Union Electric Company of Missouri. To the east are several sets of railroad tracks immediately adjacent to the flood wall. To the north (across Brooklyn Street), is a facility operated by Continental Cement Company (apparently used for cement loading/unloading). The MSD Pump Station is situated adjacent to the flood wall and approximately 400-500 ft. northeast of the tank location. Southwest of the property (across Mound street) is a bulk petroleum storage/distribution facility. This facility is characterized by several large

Reference 8

LATITUDE AND LONGITUDE CALCULATION WORKSHEET #2 LI USING ENGINEER'S SCALE (1/60)

SITE NAME: Mound Street PCB S	CERCLIS #: 1410 000 009367
AXA:	SSID:
ADDRESS: 100 Mound Street	
CITY: St. Louis STATE: MO	ZIP CODE: 63102
SITE REFERENCE POINT: Center of former Union Elec	tric Property.
USGS QUAD MAP NAME: Granite City, IL TOWNSH:	IP:45(N)/S RANGE:7 (E)W
SCALE: 1:24,000 HAP DATE: 1954 SECTION:	1/41/4
MAP DATUM: (927) 1983 (CIRCLE ONE) MERIDIAN:_	5th Principal
COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER	OF 7.5' MAP (attach photocopy):
LONGITUDE: 90 0 07 . 30 - LATITUDE:	38 • 37 • 30 •
COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER	OF 2.5' GRID CELL:
LONGITUDE: 90 ° 10 ' 00 - LATITUDE:	38 . 37 . 30 .
CALCULATIONS. LATITUDE (7.5) OUADDANGE VAR.	
CALCULATIONS: LATITUDE (7.5° QUADRANGLE HAP) A) NUMBER OF RULER GRADUATIONS FROM LATITUDE GRI	DITUE TO CIME DEED DOTAGE. 105
B) HULTIPLY (A) BY 0.3304 TO CONVERT TO SECONDS:	
$A \times 0.3304 = 64.42$	•
c) express in minutes and seconds (1'= 60"): _1	
D) ADD TO STARTING LATITUDE:3837 30 . 00	
	- ' *
SITE LATITUDE: 38 • 38 · 34	
CALCULATIONS: LONGITUDE (7.5' QUADRANGLE MAP)	
A) NUMBER OF RULER GRADUATIONS FROM RIGHT LONGITUD	DE LINE TO SITE REF POINT: 173
B) MULTIPLY (A) BY 0.3304 TO CONVERT TO SECONDS:	
$A \times 0.3304 = 57.15$	
c) express in minutes and seconds (1'= 60"): 0	
o) add to starting longitude: 90 • 10 · 00 .00	<u> </u>
SITE LONGITUDE: 90 • 10 · 57 . 15 *	
INVESTIGATOR: DON FALLS	DATE: 12/13/93

ACTIVITIES REPORT
TRRA of St. Louis
First & Mound Streets Site
MDNR Spill Report
07143 - KB - 1331

SEP 15 1993

The GEHM Corporation 1417 Bingham Rd. P.O. Box 65 Boonville, MO 65233



' FILE: Mound Street PCB's

Reference 7

DEPARTMENT OF NATURAL RESOURCES

- MEMORANDUM -

DATE:

November 22, 1993

TO:

Mound Street PCB Site

FROM:

Don Falls, Environmental Specialist

Site Evaluation Unit, Superfund Section

Hazardous Waste Program

SUBJECT: Mound Street PCB Site Reconnaissance

On November 11, 1993, I traveled to the Mound Street PCB site to conduct a site reconnaissance and meet with Mr. Daryl Bowles and Mr. David Gehm of the GEHM Corporation. The site is located at Mound and Brooklyn Streets, on the Riverfront, in downtown St Louis. I arrived at the site at 8:35 a.m. and first made a vehicle reconnaissance of the area within 1/4 mile of the site. The weather was clear and sunny with a temperature of approximately 55 degrees.

At 9:00 a.m., I met with Mr. Bowles and Mr. Gehm at the old terminal building. They were at the site to oversee the removal of waste oil that had been temporarily stored on-site from an earlier underground storage tank removal. I first asked Mr. Bowles if he could show me where the Metropolitan Sewer District pump station was located. He directed me to the pump station located at the end of Brooklyn Street, approximately 400 feet from the old terminal building. The pump station is located next to the flood wall and is surrounded by a security fence. I noted that five 55-gallon drums marked as waste oil and PCBs (Polychlorinated Biphenyl) were stored against the pump station south wall.

I then asked Mr. Bowles if he would show me exactly where the boring attempts were made that he had referred to in his activities report. We walked across Mound Street to an area immediately east of the old terminal building. This area appeared as an anomaly on the IR/T (Infrared Thermograph) survey completed in August 1993 by Entech Engineering as part of GEHM Inc.'s investigation of the site. Mr. Bowles explained that the drilling attempts were unsuccessful due to solid rock, cinder block, and other debris being encountered at a depth of about five feet. Mr. Bowles informed me that a long-time employee of Apex Fuel Company claims that Union Electric Company once used a building at this particular site to store transformers. The

Mound Street PCB Site November 22, 1993 Page 2

basement of this building was said to be full of waste oil when the building was demolished several years ago. Mr. Bowles indicated that the foundation or basement of this demolished building might explain the IR/T anomaly.

I asked Mr. Gehm about the capabilities of the IR/T and if it could image at depths of several feet. He said that he thought that the IR/T could image areas of dissimilar makeup to a depth of about 20 feet. Mr. Bowles added that buried objects as small as five-gallon buckets have been identified with the instrument. Mr. Gehm said that the IR/T images are taken using a lift bucket and are taken at a height of about 30 feet above the ground.

At 10:15 a.m., Mr. Gehm and Mr. Bowles said that they had to leave to finish with the removal of the waste oil. I thanked them for their assistance and told them that I would stay in touch with them. After taking more photographs of the area, I then left the site at approximately 11:00 a.m.

DF:so

Sverdrup

TELECON MEMO

Memo No/	Job No. 10865 - 370303
Date Mari - 2/ 19 95	Time _ 9:00 m
Between (SVC) Mile May	Placed Rec'd Rec'd
And Howard Edmond	Tel (3/t) 436-8735
Of St. Louis M.S.D.	
Subject Mound Street PCBs	/ USTs & other source / pump syst.
City Block & Bl	ock #
1. Old # 622-33/3	(Colless)
	Then they can get you block #
- Pumps to Bisse	11 Pt. Treatment F. Grand les
But But	les
then to	
- Cany bed veatly a	ies guess as to how it
Boundary (= Dakota to	Bissell Point Plant
- goes west ?	int
- Record of Sa	There under FOI
Howard Edmond's @ Ber	inard Rains
Doss Di	rector of Converge Compliance
<u>S</u>	Lovis, MO 63147
Original:	Page 2_ of 3_

Sverdrup TELECON MEMO

Memo No	Job No. 1086	5-370303	
Date <u>Nov - 2 / 19 95</u>	Time	<u> </u>	
Between (SVC) Mike May	Placed	Rec'd	
And Howard Edmond	Tel (<u>3/4</u>)	436-87	35
Of St. Louis M.S.D	•		
Subject Mound Street PC	,	the source	/pump suci
			/
Summary -+ + + + +	<i></i>	1 0	
- reiterated that	the man	Molls 1	vere most
"storm draininge"	revaled	The	stances
station only pum of exceedingly Re	evy Mic		n
It the niver	level is	at ou	exceeding
Olland stage. M	unholes are a	one for pro	tection
of the flood a	vall (undergo	und H, U) no	//
	/ 0 /	an all	Magnize
sinke 1993 then	1	Clevos 4	1 4
have definitely rega	New The	oil in	11.0
mannives ar flur	spine sta	Min	
- call chief Horne	first, before	calling	city
	# 5 - Thay		٥
information already	, 0		
			
			
			
			
			
Original:		Page 3	of 3

Mound Street PCB December 13, 1993 Page 2

ACTION TAKEN:

I phoned the St. Louis City Fire Department (314/298-1900) and asked to speak with Mr. Charles Gay. The secretary there said that Mr. Gay was out of the office, but would leave a message for him to call me. I then called Ms. Anne Olberding, EPA Region VII, and asked if she was aware of an EPA cleanup in the vicinity of the Mound and First Streets in St. Louis. Ms. Olberding said that location did not ring a bell, but she would search Cerclis according to site latitude and then send me the results.

In addition, I also spoke with Mr. Bob Krager, MDNR, Hazardous Waste Program, and asked if he was aware of any Superfund activities at the former Union Electric property at Mound Street. Mr. Krager said that he was unaware of any activities at that particular location and suggested that I contact Mr. Bob Jackson at EPA Region VII. I phoned Mr. Jackson who said that he would check the TOSCA records. Mr. Jackson called back and informed me that he could find nothing in the records about an EPA cleanup at the Union Electric power plant near Mound Street.

FINAL RESULTS:

This information will be used in the Mound Street PCB preliminary assessment.

Don Falls

Environmental Specialist

DF:so

-	
Memo No.	_ Job No. 1086 5 - 3 76303
Date) Inv 2 (
Between (SvC)	Placed Rec'd
And Howard Ed	lmond Tel (3/4) 436-8735
	metropolitan Sewer District (MSD)
	Street PCBs/USTs/Mankiole Sampling
D = old granas AB UST TRRA	y building south end - found an
- never could	really determine exact some
- <u>Pemoral</u> u	as tuned over to city of 57- Louis L - was on railroad property Horne - Fire Inspector
(may have city Block of (worked	Lot # 5) 289-1900
worked	with fire marshall - Railroad War File Control
- little other	I letteren granery of pump station
	Goperates only duing Rain
	-floodwall manholes - not sewering
·	Dut tinderground drawage keeps
- no seepay	e of sil from 1993 that he tenous
- 70 C	DNR & FRA taken care buch the
- Samples &	permit office Hampton ave - City block of Lot #
flordwald?	F-6A1 (12) (13) (14) manhole nothing to do with M 5D -Corp of Engineers need to check
Original: cc:	Page of

DEPARTMENT OF NATURAL RESOURCES Division of Environmental Quality Hazardous Waste Program

TELEPHONE OR CONFERENCE RECORD

File: Mound Street PCB Site Date: December 13, 1993

TELEPHONE (314) 436-8735 CONFERENCE

Incoming () Field ()
Outgoing (X) Office (X)

SUBJECT: Mound Street PCB Site

PERSONS INVOLVED

Name
Don Falls
Howard Edmond
Anne Olberding
Bob Jackson

Representing
MDNR/HWP
Metropolitan Sewer District
USEPA Region VII (913) 551-7718

USEPA, Region VII (913) 551-7718 USEPA, Region VII (913) 551-7020

SUMMARY OF CONVERSATION:

I phoned Mr. Howard Edmond of the MSD (Metropolitan Sewer District) to find out exactly how the waste oil was seeping into the Brooklyn Street pump station. Mr. Howard explained that sometime around the middle of July 1993, oil was noticed seeping from the storm sewer into the wet well of the pump station. Mr. Howard said that the Brooklyn Street pump station only pumps storm water, and therefore only operates during periods of rain. Mr. Howard said that the oil stayed on top of the wet well, and was later pumped off by React Environmental. He said that it was possible that some of the oil made it out to the river. Mr. Howard said that the MSD laboratory did the analysis on the samples that he collected. The results indicate Aroclor 1254 in the oil at 47 parts per million.

I then asked Mr. Howard if he was familiar with the history of the Mound Street site. He related that there was a rumor that the basement of the former Union Electric building, which occupied part of the site, was said to be full of old transformers, and was claimed to be an EPA (U.S. Environmental Protection Agency) Superfund site where a "poor cleanup" was performed before the building was demolished.

Mr. Howard further said that he believes that the City of St Louis may now own the former Union Electric property, and Inspector Charles Gay with the St. Louis Fire Department would know more about the site, because he has been working on the site for some time.



Preliminary Assessment Hound Street Pover Plant St. Louis, Missouri TDD #F-07-8708-29 PAN #FH00579PA

Site #Y33 Project #001

Prepared by: E & E/FIT for Region VII EPA
Task Leader: Eric Hess, E & E/FIT

Superfund Contact: Pauletta R. France-Isetts
Date: June 23, 1988

Final Report

Screening Site Inspection

Laclede Coal Gas

St. Louis, Missouri

EPA ID# MOD981715980

TDD #F-07-9008-020 PAN #FM00579SA

Site #Y33 Project #002

Prepared by E & E/FIT for the

Region VII EPA RPO

Project Manager: Keith Brown

Superfund Contact: Greg Reesor

Date: October 29, 1991

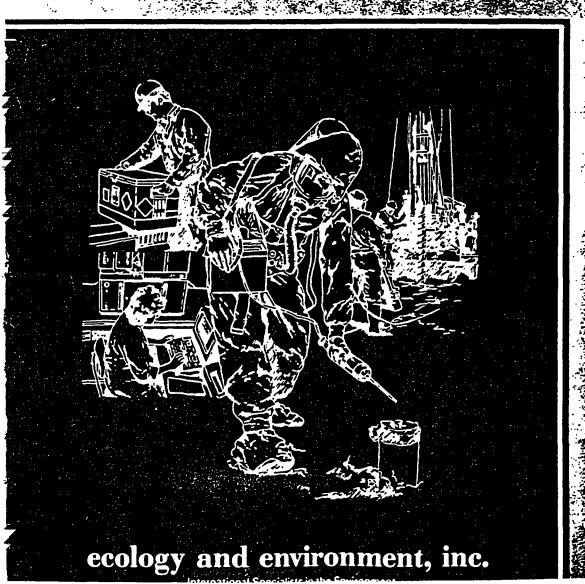
HAZARDOUS SITE EVALUATION DIVISION

ECEIVET

FEB 183

ARDOUS VALE PROBLAM
SSOURI DEF STATE
NATURAL TESTERS

Field Investigation Team Zone II



CONTRACT NO. 68-01-7347

DEPARTMENT OF NATURAL RESOURCES Division of Environmental Quality Hazardous Waste Program

Reference 1

TELEPHONE OR CONFERENCE RECORD

File: Mound Street PCBs

Date: March 15, 1994

TELEPHONE (314) 425-4468

CONFERENCE

Incoming ()

Field ()

Outgoing (X)

Office ()

SUBJECT: Jefferson National Expansion Memorial - Gateway Arch

PERSONS INVOLVED

<u>Name</u>

Representing

Ms. Louise Barra Don Falls National Park Service, Gateway Arch MDNR, Hazardous Waste Program

SUMMARY OF CONVERSATION:

I phoned the public affairs office of the Jefferson National Expansion Memorial in St. Louis and spoke with a Ms. Louise Barra. Ms. Barra is a public affairs officer with the National Park Service. I asked Ms. Barra if she could tell me the exact acreage of the park and the total annual attendance. Ms. Barra informed me that the park encompasses just over 90 acres and the total annual attendance for all the park property, including the parking structure, is approximately 2.7 million people.

FINAL RESULTS:

This information will be incorporated into the Mound Street PCB Preliminary Assessment.

Don Falls

Environmental Specialist

Hazardous Waste Program

DF:so

	MOUND ST	TREET SITE STRA	TIGRAPHY		
	Stratigraphic Unit	Composition	Thickness (ft.)	Remarks	
Quaternary System	Alluvium	Clay, silt, sand, gravel	80	High yield aquifer	
Mississippian System	Ste. Genevieve Formation	Silty to sandy limestone	470 - 530	Yields small to moderate quantities of water	
	St. Louis Limestone				
	Salem Formation			CEIV	ΕŊ
	Burlington- Keokuk Limestone	Cherty limestone	240	JAN 6 Y	PROGRAM
	Fern Glen Formation	Red limestone and shale	100	HAZARDOUS WASY	Lunare 2
	Chouteau Group	Limestone, shale and siltstone	0 - 122		
Devonion System	Sulphur Springs Group	Sandstone and limestone	0 - 60		
	Grassy Creek Shale	Carbonaceous Shale	0 - 50		
Silurian System		Cherty limestone	0 - 200		
Ordovician System	Maquoketa Shale	Silty, limey, or dolomitic shale	150	Confining layer	

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MEMORANDUM -

DATE:

January 5, 1994

TO:

Don Falls, Environmental Specialist, HWP, DEQ

FROM:

Edith Starbuck, Geologist, DGLS

SUBJECT: Existence of karst near the Mound Street Site

Sinkholes and caves can be found in the Mississippian bedrock within the target area. The sinkholes are represented as closed depressions on the Granite City topographic map. Also, the existence of karst features is discussed in the DGLS publication, "Engineering Geology of St. Louis County, Missouri". The karst aquifer probably does not directly underlie the site, however, and it is not likely to be affected by contaminant migration from the site. If the site is actually on the bedrock residual area, any water that percolates down into it should move toward the alluvial aquifer since groundwater movement is toward the river.

Please let me know if you have any further questions about the site geology (314)368-2136.

ES:kb

YSH JAN 7 AM 11 06
HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF

NATURAL RESOURCES

-----Header Data-----St:MO Cnty:ST. LOUIS Log # Owner: BELCHER HOTEL NE SW SW TRS: S13 T45N R07E Alias type: Facility ID 001655 Tat.: Alias:010000 Type well:Noncommunity Public Well Long.: Quad:UNKNOWN Type log: D Date: / Driller: Confidential: N Release Dt. / Driller License No: Date: / Logger: Elev.: 420 Elev.S Yield: 150 SWL:(a) H20 @: T.D.: 2200 base: DrDwn: 000 SWL:(b) Bedrock at: 0 Samples saved:N Int. cored: 0 to 0 Top Fm.: Bot Fm.: Problems: Remarks: ----- Construction Data----Log #:001655 Date Completed:09/1951 80 Diam:160.0 I/O:O Sz. Hole: 0.00 Sz. Below: 0.00 CASING: Dpth: 0.00 0 0.00 0 0.00 0 Methd Dt Abnd Plug Date Top Bottom Rig GROUT: Type 0 / Scrn Typ Slot Size Loth PUMP: Set at TOH Type Cap 0 Well Treat Type Dev Typ Compl Perf. Interval Tube Pres. Oil Gas Top: 0 Bot: 0 Open Top: Formations Bot: Other data sources: Remarks: ---Stratigraphy Data----

Log :	#:001	655	Lith	Mine:	rals	
Top	Base	Name	Pr Sc Mn Pri	Oc Sec	Oc Mnr	OC
· 0	230	ST LOUIS LIMESTONE	LS SH	0	0	0
230	350	SALEM FORMATION	LS CH	0	0	0
350	380	UNKNOWN	SH	0	0	0
380	460	WARSAW FORMATION	LS SH	0	0	0
460	630	KEOKUK-BURLINGTON LS. UNDIFF	LS SH	0	0	0
630	720	FERN GLEN FORMATION	LS SH CH	0	0	0
720	760	KINDERHOOK SHALE	SH	0	0	0
760	880	SILURIAN SYSTEM	LS	0	0	0
880	1040	MAQUOKETA SHALE	SH LS	0	0	0
1040	1180	KIMMSWICK LIMESTONE	LS	0	0	0
1180	1240	DECORAH GROUP	LS CH	0	0	0
1240	1370	PLATTIN LIMESTONE	LS	0	0	0
1370	1502	JOACHIM DOLOMITE	SH LS	0	0	0
1502	1640	ST. PETER-EVERTON FMS. UNDIFF	SS	0	0	0
1640	2200	CAMBRIAN SYSTEM	SS LS	0	0	0

Printed on 12/30/93 at 10:49:09.

```
-----Header Data-------
                                   St:MO Cnty:ST. LOUIS
 Log # Owner: NORTHWESTERN COOPERAGE CO
                                   SE SE NE TRS: SO2 T45N RO7E
 019835
        Alias:
                                   Lat.:38,40,23.648N
                                   Long.:90,11,25.660W
Type well:Private Well
                                   Quad: 38090C6
Type log: S
Driller: HAVERSTICK WELL CO Date: /
                                   Confidential: N Release Dt. /
Driller License No:
                  Date:08/1961
Logger: C.E. ROBERTSON
Elev.: 420 Elev.S Yield: 260 SWL:(a) H20 @:
T.D.: 80 base: DrDwn: 31 SWL:(b)
Bedrock at: 75 Samples saved:N Int. cored: 0 to 0
Top Fm.:HOLOCENE ALLUVIUM
Bot Fm.:MISSISSIPPIAN SYSTEM
Problems:
Remarks:
----- Data------
Log #:019835 Date Completed: /
CASING: Doth: 59 Diam: 8.00 I/O:O Sz. Hole: 0.00 Sz. Below: 0.00
             0
                 0.00
                   0.00
             0
             0
                   0.00
GROUT: Type Rig Methd Dt Abnd Plug Date
                                          Top Bottom
                       TDH Scrn Typ Size
PUMP:
                 Set at
                                          Lath
                                                Slot
                   0
                                    0
                                           0
Well Treat Type Dev Typ Compl Perf. Interval Tube Pres. Oil Gas
                         Top: 0 Bot:
Open Top:HOLOCENE ALLUVIUM
Formations Bot: MISSISSIPPIAN SYSTEM
Other data sources:
Remarks:
--Lith-- ------Minerals-----
```

Printed on 12/30/93 at 10:45:40.

------Header Data------.Log # Owner:FISHER CHEMICAL CO St:MO Cnty:ST. LOUIS NW SE SE TRS: S02 T45N R07E 002748 Alias: Lat.: Type well:Private Well Long.: Quad: UNKNOWN Type log: S Driller:WISE Date:08/1933 Driller License No: Confidential: N Release Dt. / Date: / Logger: GLEASON Elev.: 430 Elev.S Yield: 30 SWL:(a) H20 @: T.D.: 210 base: DrDwn: 150 SWL:(b) Bedrock at: 45 Samples saved:N Int. cored: 0 to Top Fm.:ST LOUIS LIMESTONE Bot Fm.:ST LOUIS LIMESTONE Problems: Remarks: 4 5 ----- Donstruction Data------Log #:002748 Date Completed:08/1933 30 Diam: 8.00 I/O:O Sz. Hole: 0.00 Sz. Below: 8.00 CASING: Doth: 0 0.00 0.00 0 0 0.00 GROUT: Type Rig Methd Dt Abnd Plug Date Top Bottom 0 0 PUMP: Set at TDH Scm Typ Size Lath Type n 0 Well Treat Type Dev Typ Compl Perf. Interval Tube Pres. Oil Gas Top: 0 Bot: 0

Open Top:ST LOUIS LIMESTONE Formations Bot:ST LOUIS LIMESTONE Other data sources:

Remarks:

----- Data----- Stratigraphy Data-------

 Log #:002748
 --Lith-- -------Minerals------

 Top Base Name
 Pr Sc Mn Pri Oc Sec Oc Mnr Oc 45 210 ST LOUIS LIMESTONE

 LS CH
 0
 0
 0

Printed on 12/30/93 at 10:46:32.

. Log # Owner: CUPPLES COMPANY

003616

St:MO Cnty:ST. LOUIS

SE NE NW TRS: SO2 T45N R07E

Lat.: Alias:

Long.:

Type well:Private Well

Quad:UNKNOWN

Type log: S

Driller:WISE Driller License No: Date:05/1936

Confidential: N Release Dt. /

Logger:GROHSKOPF

Date: /

Elev.: 421 Elev.S Yield: 15 SWL:(a) H20 @:

T.D.: 885 base: DrDwn: 0 SWL:(b)

Bedrock at: 0 Samples saved:N Int. cored: 0 to 0

Top Fm.:ST LOUIS LIMESTONE

Bot Fm.:SILURIAN SYSTEM

Problems: Remarks:

-----Stratigraphy Data------

Log i	#:003	516]	ith-		N	Minerals	
Top	Base	Name	Pr	Sc M	In Pri	Oc 5	Sec Oc Monr	Oc.
0	210	ST LOUIS LIMESTONE	LS	SH		0	0	0
210	325	SALEM FORMATION	LS	CH S	H	0	0	0
325	435	WARSAW FORMATION	SH	LS C	H	0,	0	0
435	595	KEOKUK-BURLINGTON LS. U	UNDIFF CH	LS		0	0	0
595	700	FERN GLEN FORMATION	CH	LS S	TH .	0	0	0
700	735	CHOUTEAU GROUP	LS	CH		0	0	0
735	755	CHATTANOOGA SHALE	SH			0	0	0
755	885	SILURIAN SYSTEM	LS	SD D	L	0	0	0

Printed on 12/30/93 at 10:47:17.

SOKKAN

BOOK

Migurus Street PCB

ST LOWIS MO

Crakeciis ils ind momoniferezz

120-131-522-0

Reference 22

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MEMORANDUM -

DATE:

:

January 5, 1994

TO:

Don Falls, Environmental Specialist, HWP, DEQ

FROM:

Edith Starbuck, Geologist, DGLS

SUBJECT: Existence of karst near the Mound Street Site

Sinkholes and caves can be found in the Mississippian bedrock within the target area. The sinkholes are represented as closed depressions on the Granite City topographic map. Also, the existence of karst features is discussed in the DGLS publication, "Engineering Geology of St. Louis County, Missouri". The karst aquifer probably does not directly underlie the site, however, and it is not likely to be affected by contaminant migration from the site. If the site is actually on the bedrock residual area, any water that percolates down into it should move toward the alluvial aquifer since groundwater movement is toward the river.

Please let me know if you have any further questions about the site geology (314)368-2136.

ES:kb

HAZARDOUS WASTE FROCRAM MISSOURI DEPARTMENT OF NATURAL RESOURCES

RECEIVED

ACTIVITIES REPORT TRRA, FIRST STREET SITE, ST. LOUIS, MO SEPTEMBER 1, 1993



- IR/T failed to reveal anomalies on or around the site indicative of a leak plume, trail or signature.
- Water was not present in the tank. (Given the depth to groundwater 8.5', and depth to the tank bottom, 10.5', and the extreme amount of hydrostatic pressure in the area.)

Additionally, the presence of the sheen at the groundwater/surface interface suggests a problem much more widespread than that of a single source. It is likely, the rising groundwater from the effects of the flooding in the immediate area had a direct affect on the sudden presence of the oil in the pump station.

Report Distribution List:

- Ms. Kris Davidson, Environmental Specialist
 Missouri Department of Natural Resources
 Hazardous Waste Program Superfund Section
 P.O. Box 176
 Jefferson City, Missouri 65102
- 2. Mr. Charles Gay, Fire Inspector St. Louis Fire Department Fire Prevention Bureau 1421 N. Jefferson St. Louis, Missouri 63106
- 3. Mr Bob Ripper
 Terminal Railroad Association of St. Louis
 700 North Second Street
 St. Louis, Missouri 63102



4.3 Drilling/Sampling.

On August 4, 1993, a drilling crew was mobilized to the site and a total of five boring attempts were made. Three attempts were unsuccessful with auger refusal at five feet. One unsuccessful attempt was made on site approximately 30 feet south of the west end of the tank. Solid debris was encountered to a depth of 5 feet and the attempt was abandoned. At the request and permission of Inspector Charles Gay (SLFD), two other attempts were made in the area of the IR/T anomaly discovered within the former Union Electric Property. Both attempts were abandoned at a depth of 5 feet encountering solid rock debris.

The two successful attempts were located at the east (down gradient) end of the tank location, and approximately 37.5 feet south of the tank location. One sample was obtained from each of these borings and submitted to a qualified laboratory per analysis presented in the following table

SAMPLE RESULTS SUMMARY TABLE (in ppm)								
I.D	LOCATION	ТРН	РСВ	BENZENE	TOLUENE	E. BENZENE	XYLENES	
01	10 FT. DEPTH	67	< 0.05	< 0.002	< 0.002	< 0.002	< 0.002	
02	8 FT. DEPTH	23	<0.05	< 0.002	< 0.002	< 0.002	< 0.002	

5.0 SUMMARY/DISCUSSION

Analysis of the tank contents reveal a mixture of Ethylene Glycol (Antifreeze) and Waste Oil and should be disposed of in accordance with State and Federal Regulations.

The tank is scheduled for removal the first of October, 1993. Removal will be in accordance with MDNR UST Closure Guidance.

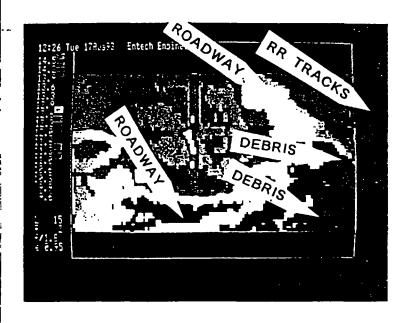
Results of site activities suggest the tank as the source of the oil seepage into the pump station unlikely for the following reasons:

- The pump station is located topographically upgradient from the UST.
- Soil sample results are not indicative of a release sufficient to supply free product from the UST to the pump station.

GEHM # 0116 PAGE 7







VISUAL IMAGE NUMBER: 3V

THERMOGRAM IMAGE NUMBER: 3T

LOCATION:

Terminal R.R.

1st and Mound Street St. Louis, Missouri

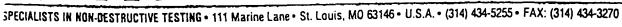
ITEM:

Example data image

LOCATION:

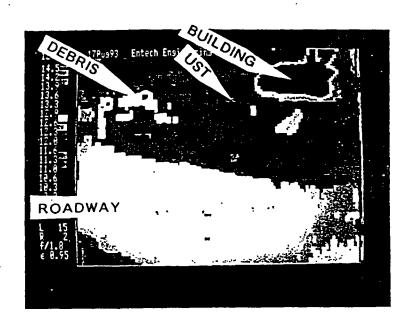
Refer to drawing item #3

INVESTIGATION DATE: 8/17/93









VISUAL IMAGE NUMBER: 2V

THERMOGRAM IMAGE NUMBER: 2T

LOCATION:

Terminal R.R.

1st and Mound Street St. Louis, Missouri

ITEM:

Example data image

LOCATION:

Refer to drawing item #2

INVESTIGATION DATE: 8/17/93



plume, trail or other leak signature which would suggest a release capable of migrating from the UST to any point off-site.

The investigation did, however, indicate an anomaly on the former Union Electric Company property south of the TRRA property (see Figure 2). An area measuring approximately 10' x 10' was identified. IR/T cannot identify the cause of an anomaly without either an intrusive investigation or knowledge of a potential source of an anomaly. At the request and permission of Inspector Charles Gay (SLFD), this area was investigated and described in section 4.3.

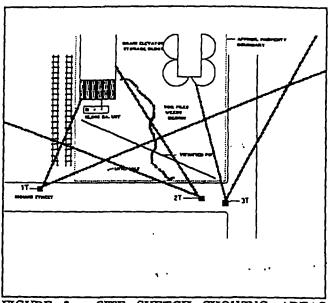


FIGURE 3: SITE SKETCH SHOWING AREAS DEPICTED ON IR/T THERMOGRAMS.

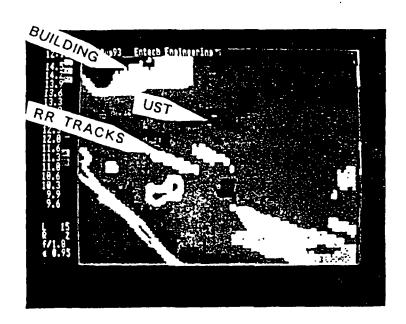
From the IR/T data generated, three views were selected for presentation in this report. These views are depicted on the following site sketch and the thermograms are presented on the following pages. The data was gathered between 11:00 p.m and midnight from a lift truck at approximately 30'. The corresponding photographs are provided for the purpose of reference.

GEHM # 0116



PECIALISTS IN NON-DESTRUCTIVE TESTING • 111 Marine Lane • St. Louis, MO 63146 • U.S.A • (314) 434-5255 • FAX: (314) 434-3270





VISUAL IMAGE NUMBER: 1V

THERMOGRAM IMAGE NUMBER: 1T

LOCATION:

Terminal R.R.

1st and Mound Street St. Louis, Missouri

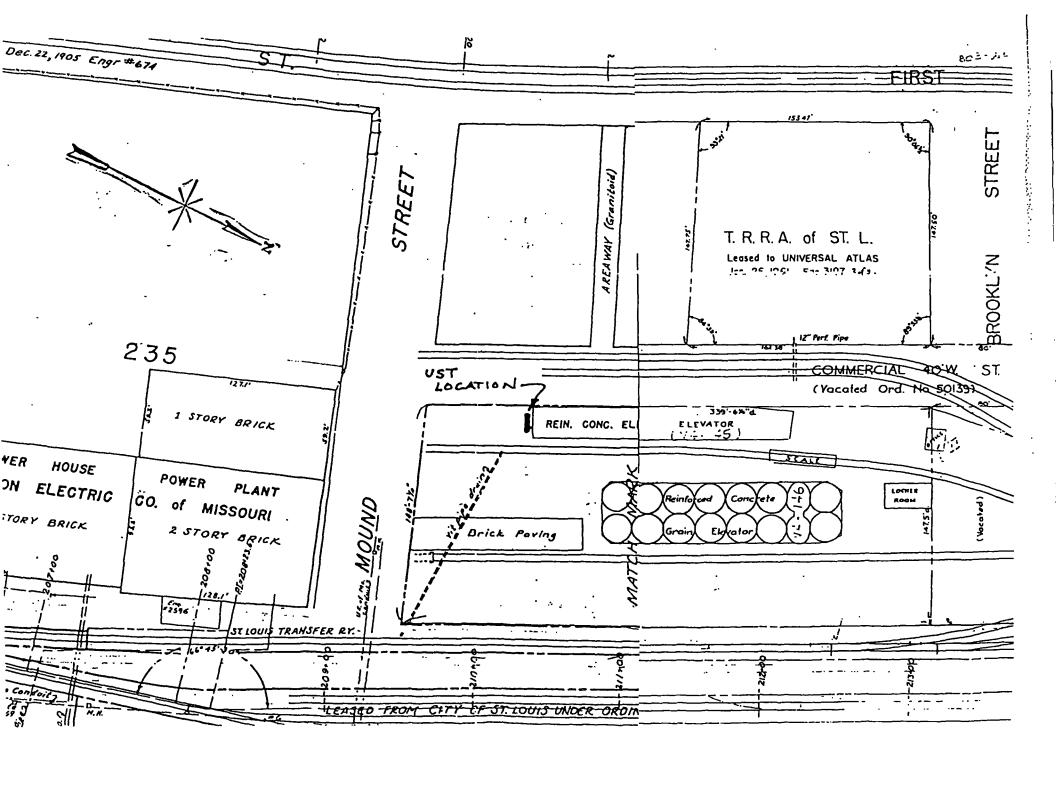
ITEM:

Example data image

LOCATION:

Refer to drawing item #1

INVESTIGATION DATE: 8/17/93



•	-				.		
OEPTH IN FEET	DESCRIPTION OF MATERIAL	SAMPLES	STANDA		rziw D 1606]		SISTANCE
		\	\ '\	20	30	40	ça
	Black Silty Soils W/Const. Debris and Red Brick Debris to 10'				•		
- 5-		-		} ;			
	Groundwater 8.5'	ss 10'					
10	Terminate Boring 10'						
						1.	
			}				
- 15	•			1			
		,		}			
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- 20-	•		1				
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30-							
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35-							
	•		•				
	CAOWOWATER DATA	Faulcon	mental O	peratio	ns, Inc.	┸┑	Sering Me.
,C0U=1E	ACD AT 8.51 FECT FREE WATER NOT ENCOUNTERED		etabert \$1, La	40 63	110		.01
1	FECT AFTER HOURS DURING DRICING FECT AFTER HOURS		LOGGER: GE	1 Auec	··· SF		
		SUMPACT ELEVATION			w sicm:		

·	-				•	
OEPTH IN FEET	DESCRIPTION OF MATERIAL	SAMPLES	STANDA	RD PENETR (ASIM	0 1646)	ESISTANCI
	Black Silty Soil w/Const. Debris to 3'		10	26 :	90 40	<u>\</u>
	Refusal 3'					
10_ 	·					
- 15-			, ,			
- 20-						
- 25-						
- 30-						
- 35-	-					
	GROUNDWATER DATA			erations, in	1C.	Suring No.
A1	FECT AFTER HOURS PURHS DARLING	DATE: 8/5/93 DARLER: GB LE		AUGCA: S	F	.02

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		:				•		
OEPTH IN FEET	DESCRIPTION OF MATERIAL	SAMPLES	STAND			M D 1506		ESISTANCE
	<u> </u>		10		20	30		60
	Black Silty Clay to 8'					,		
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STANDARD PENETRATION RESISTANCE [ASTM D 1606] SAMPLES DESCRIPTION OF MATERIAL - BLOWS PER FOOT Brown Clay w/Rock Debris To 3' Refusal 3' 10-GROUNDWATER DATA Environmental Operations, Inc. 8/5/93 PROJECT NO. 57 FREE WATER NOT (HEDUNIERED DURING DARLING FECT AFTER HOURS GB LOGGEN: AUGERT SF .05 DAKLEA: FECT AFTER HOURS SURFACE ELEVATION

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8600 Kanis Road Little Rock, AR 72204-2322 (501) 224-5060

The Gehm Corporation (C-1270) Post Office Box 65 Boonville, MO 65233

August 16, 1993

ATTN: Mr. Daryl Bowles

Control No. 3520

Sample Description: Two (2) soil received on 8/9/93

Re: Terminal Rr Assoc. of St. Louis Mound & First Streets

(Site) St. Louis, MO Project No. 0116

P.O. No. 080-693 116

Result:

Parameter	Unit	01 ; <u>8-4-93 0930</u>	02 <u>8-4-93 0945</u>
Total Petroleum Hydrocarbo	ns ma/Ka	67	23
PCB	mg/Kg	<0.05	<0.05
Benzene	mg/Kg	<0.002	<0.002
Toluene	mg/Kg	<0.002	<0.002
Ethylbenzene	mg/Kg	<0.002	<0.002
m- & p-Xylenes	mg/Kg	<0.002	<0.002
o-Xylenes	mg/Kg	< 0.002	<0.002

Method:

Modified EPA 418.1, EPA 3550, 8080, 5030, 8020

Remark:

Results are presented on an as-received basis.

Enclosure: Chain of custody

AMERICAN INTERPLEX CORPORATION

MWM/tj

Michael W. McNerlin Laboratory Director



REQUEST

Schmitted by: (Nome) THE GEHM 1417 BING BOOMVILLE DARYL B	CORPOZI HAM RI	л., Р.О 652	.33- oc	5 E	Americ	ICAN	Inte				322	MOUNT	016' P { MVF	FIRST MO.	ssoc. Stree	" OF ST. L FTS (SITE.)
Project No.: 01/6			882-3 ble Regulatory 7/43-}	No.: CB -133	:		: (For Lab)	93	116	500	plays 1100	The State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the S	Sand Sand	2			3/1-
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8600 Kanis Road Little Rock, AR 72204-2322 (501) 224-5060

The Gehm Corporation (C-1270) Post Office Box 65

August 20, 1993

Boonville, MO 65233

ATTN: Mr. Daryl Bowles

Control No. 3586

Sample Description: One (1) glycol/oil collected by Environmental Operations

received on 8/12/93 Re: Gehm Corp Olll

Result:

<u>Parameter</u>	Unit	<u>5780</u>	Regulatory <u>Level</u>
Ignitability ·	ok.	Non-Ignitable below 212	7
Toxicity Characteristic Leaching Pro	ocedure		
Solids	%	100	-
Silver	mg/l	<0.007	5.0
Arsenic	mg/1	<0.2	5.0
Barium	mg/l	2.1	100.0
Cadmium	mg/l	0.019	1.0
Chromium	mg/l	0.0096	5.0
Mercury	mg/l	<0.01	0.2
Lead	mg/l	<0.1	5.0
Selenium	mg/l	<0.2	1.0

Method:

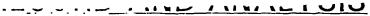
EPA 1010, EPA 1311 (Federal Register/Vol. 57, No. 227/November 24, 1992), 3010A, 6010A, 7470

Enclosure: Chain of custody

AMERICAN INTERPLEX CORPORATION

SL/tm

Technical Director





REQUEST

Submitted by: (Name/	elephone)			1	sb: (Name//	Address/T	elephone)					Clen	t Name/Projec	ct Locution: (C	ontact/Phone	#)		
DARYL R. BOWLES, C					American Int 1800 Kards i		rporedon						Terminal Retroad Association of St. Louis					
THE GEHM CORPORA P.O. BOX 65	ION				1							First & Mound Streets St. Louis, MO						
BOONVILLE, MO 652	33 (616	1	1						Mr. I	Mr. Bob Ripper								
Project No.: 0116		Anaton	No Rominion	/ No.: 07143-K							J/214) 539-5198							
ridect No.: U116		Applica	DIE NEGUEION	/ NO.: U/ 1434	13-KS-1331 P.O. F: (For Leb) Samplers Signature (
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8600 Kanis Road Little Rock, AR 72204-2322 (501) 224-5060

The Gehm Corporation (C-1270) Post Office Box 65 Boonville, MO 65233

August 20, 1993

ATTN: Mr. Daryl Bowles

Control No. 3521

Sample Description: One (1) oil/glycol received on 8/9/93 P.O. No. 050593 DB

Result:

Parameter	Unit	TANK WASTE 8-04-93 1000
Total Halides	mg/Kg	880
PCB	mg/kg	<10
Heat Content	BTU/1b	9480

Method:

EPA 9020, 600/4-81/045, ASTM D240

Remark:

As requested analysis for Toxicity Characteristic Leaching Procedure and

Flash Point was performed on additional sample referenced American Interplex Corporation Control No. 3586. Analysis performed on oil layer

only.

Enclosure: Chain of Custody

AMERICAN INTERPLEX CORPORATION

SL/tm

Steven Lovell Technical Director



1417 Bingham Road Post Office Box 65 Boonville, MO 65233

816-882-3485 816-882-5766 (Fax)

October 26, 1993

Ms. Kris Davidson, Environmental Specialist Missouri Department of Natural Resources Hazardous Waste Program - Superfund Section P.O. Box 176 Jefferson City, Missouri 65102

RE: UST Removal Closure Report

Dear Ms. Davidson,

We are submitting the enclosed report on behalf of Terminal Railroad Association (TRRA) of St. Louis. The report contains soil sample analysis results as requested by TRRA. I hope you find this information useful in your investigation of the area.

Should you have any questions regarding this report or require additional information, please call me at (816) 882-3485.

Sincerely,

Daryl R. Bowles, CHMM

Director.

Environmental Field Services

cc: Mr Bob Ripper

Terminal Railroad Association of St. Louis

700 North Second Street St. Louis, Missouri 63102

RECEIVE D

HAZARDOUS WASTE PROGRAM MISSOURI DEPARTMENT OF NATURAL RESOURCES

		COMPANY EN	CUST	ODY TRAN	SFER RECO	RD/	LAB(Icha	DRA ام	TORY	WORK	C.REQUE	ST Page 1 of 1
		ADDRESS 264	9 Pastale	1221	DATE &	- <u>- </u>	11 -	93	-	P.O. NO.	NO. <u>3</u> _/	Page of
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		PHONE (3/4)	771-86	142	FAX ()		·		·		
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<u>Ke</u>	+-214066	-: Gehm Carp. (CC. # 01							NALYS	ES REQ	UESTED
		SAMPLE IDEN	TIFICATIO	N			N.	ZY -	77	77	11.1	7
ITEM	LAB NO.	SITE CODE/ SAMPLE DESCRIPTION	DATE COLLECTED	PRESERV.	CONTAINER	3	T. S. S. S. S. S. S. S. S. S. S. S. S. S.			///	////	COMMENTS
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Petroleum Fuel & Terminal Foot of Mullanphy Street St. Louis, Missouri 63102 (314) 621-0522

Charles Gay
Fire Inspector
Fire Prevention Bureau
1421 North Jefferson
St. Louis, Missouri 63100

Imar Mr. Gay

Per our conversation on September 3, 1993. We discovered the leak during our yearly hydro tessing of our pipe lines/hoses. When #e. experienced a loss of 25# lb of pressure.

We then started to isolate the most likly place and this would be in the expansion joint at the sea wall. After excavating the site we then found a small pen hole in a 6 inch pipe line. After making the necessary repairs we decided to take this pipe line out of service.

We recovered 2 1/2 bbls of cil/soil to be disposed of. If you feel the need to contact me on this mater please feel free to do so at (314) 621-0522.

Thank you

Randel H. Lewis
Terminal Manager

He 193

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	Co. Vacarity Tray
Dept.	Phone #
Fex #	Fax



CHAIN OF CUSTODY RECORD AND ANALYSIS

REQUEST

1	Submitted by: (Name/Selephone/Date)				i.e.	Lab: (Hama/Address/Telephona) AMERICAN INTERPLEY CORP.					T	Chart Name/Project Location (Contact/Phone 8) TORMINAL RAIL ROAD ASSN.							
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Lab. No. 887 Sample Sou	irce: Manhule	F-6A1(#B)	Date Received 8/9/9	3
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X IR X GC □ LEL □ RAD □	JUV 🗆 FLUOR 🗆	TLC 🗆	是在自己的人的人 自己的	
☐ Priority Pollutant mg/L	(except as noted) ' · · · ·	BASE/NEUTRALS: (Co	nťď)
VOLATILES: acrolein acrylonitrile benzere bromodichloromethane bromodichloromethane bromodichloromethane bromodichloromethane carbon tetrachloride chlorobenzene chloroethane 2-chloroethyl vinyl ether chloroform chloromethane 1,2-dichloromethane 1,2-dichlorobenzene 1,3-dichlorobenzene 1,1-dichlorobenzene 1,1-dichloroethane 1,1-dichloroethene 1,2-dichloropropane 1,3-dichloropropane 1,3-dichloropropene, cis 1,3-dichloropropene, cis 1,3-dichloropropene, trans athyl benzene methylene chloride 1,1,2,2-tetrachloroethane tetrachloroethane tichloroethene 1,1,1-trichloroethane tichloroethene 1,1,1-trichloroethane tichloroethene vinyl chloride ACIDS: 4-chloro-3-methylphenol 2-chlorophenol	ACIDS: (Cont'd) 2.4-dinitrophenol 2-nitrophenol 4-nitrophenol pentachlorophenol pentachlorophenol phenol 2.4.6-trichlorophenol BASE/NEUTRALS acenaphthene acenaphthylene anthracene benzo(a)anthracene benzo(a)anthracene benzo(a)pyrene benzo (b) fluoranthene benzo (c) fluoranthene bis (2-chloroethoxy) meth bis (2-chloroethoxy) meth bis (2-chloroethoxy) meth bis (2-chloroethoxy) phthalat 4-bromophenyl phenyl eth chrysene dibenzo (a,h) anthracene 3.3-dichlorobenzidine diethyl phthalate di-n-butyl phthalate di-n-butyl phthalate di-n-butyl phthalate di-n-butyl phthalate di-n-octyl phthalate 2.4-dinitrotoluene 2.6-dinitrotoluene 1.2-diphenylhydrazine fluoranthene	lane her te	hexachlorocyclopentadene hexachlorocyclopentadene hexachlorocyclopentadene indeno (1.2.3-cd) pyrene isophorone naphthalene nitrobenzene N-nitrosodimethylamine N-nitrosodinen-propylamine N-nitrosodiphenylamine phenanthrene pyrene 2.3.7,8-tetrachlorodibenzo-p-diox 1.2.4-trichlorobenzene PESTICIDES: aldrin alpha-BHC beta-BHC detta-BHC chlordane 4.4'-DDD 4.4-DDT dieldrin alpha-endosulfan beta-endosulfan endosulfan suifate endrin endrin aldehyde heptachlor PCB-1211 PCB-1232 PCB-1248	
2,4-dichlorophenol 2,4-dimethylphenol 4, 6-dinitro-2-methylphenol	fluorene hexachlorobenzene hexachlorobutadiene		PCB-1254 PCB-1260 toxaphene	<u> </u>
Gas Chromatography results: Thin-Layer Chromatography results:		iccel Fy	V =] . + . - c	
Infrared Spectroscopy (a) methods ut (b) results: 1465	tilized: Strong test rung - Triglet rung - Such let rung - Sichlet derate - Such let	Odor API Gravii Solubilitie	y:s:	
	Dectra and	6c/ <i>I=I</i> M	recemble Diecel	Fuel
	Date Transmitted:	8/13/53	by: Daniel 7	Louida

MSD ENVIRONMENTAL COMPLIANCE LABORATORY SPECIAL SAMPLE FORM

Lab. No. 887	_/ Comp		Date Receive		9/93
Sample Date8/9	793	to the second second	ie: <u> 083</u>		
Requested by:	BMONID	Co	llected by:	SAME	
Sample Source: M/H	# MHO1	3 F-6	11	Truck No.	
Sampling Location: NEXT	TO FLODD WA	ILL AT MU	LLANPHY		
Reason for sample: 70	DETERMINE	IF PCB'S	PRESENT		di Paris
	☐ Stream	☐ Storm	Seepage .	STP	. ☐ Hauler
☐ Industry ☐ Other (exp	lain)		The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s		
Analysis: except as noted	□ mg/L □ uģ	/L 🗆 mg/kg	□ % comp	□ other _	
□ pH	_(units) [] F		□ Hg	
□ SPC		ı cı	<u> </u>	□ As	
□ ALK] CN		□ Ba	<u></u>
□ ACI] CNA		□ Be	<u> </u>
□ TS			· · ·	□ Cd	
□ ss		л NH ₃	· · · · · · · · · · · · · · · · · · ·	□ Cr	<u> </u>
□ vss		3 NO ₃		□ Cu _	
□ %V		3 1 NO ₂		□ Fe	<u> </u>
□ SET	_(ml/L) ·	2 . 1 PHT		□ Pb	
□ GRE		PHO		□ Ni	
□ BOD		so,		□ Se	
□ COD	[so ₃		□ Ag	
□ TOC		າ ຣໍ		□ Zn	· ·
D PHE		SUR		□ ті	<u> </u>
<u> </u>		3 <u> </u>		□ ѕь	<u> </u>
	_ c	·		<u> </u>	
		ı		o	
□ Color:		J Cr ⁺⁶		-	
Odor:			🗆 Tot.	Hardness	
Appearance:		·	□ Tot.	Chlorine	
Organics IR	GC LE	L RAD	Ov	FLUOR I	D
Biological:	Bioassay:		Total Coli	•	No./100ml
			Fecal Coli	L:	No./100ml
<u> </u>	Microscop	Lc:	FecalStre):	No./100ml
Remarks: <u>CHOCK FOR</u>	PCB'S				
			<u></u>		
		-			

8/17/93

MSD ENVIRONMENTAL COMPLIANCE LABORATORY INSTRUMENTATION ANALYSIS

mple Date 8/1/93Time:	Carlo	Grab 🗆 Comp	Conected by:
IR TO GC LEL RAD L	IV FLUOR TL	c 🗆	
Priority Pollutant mg/L	(except as noted)		BASE/NEUTRALS: (Confd) hexachlorocyclopentadiene
VOLATILES:	ACIDS: (Cont'd)	•	hexachloroethane
acrolein acrylonitrile	2,4-dinitrophenol 2-nitrophenol	-	indeno (1.2.3-cd) pyrene
benzene Z). 3	4-nitrophenol		naphthalene .
bromodichloromethane bromoform	pentachlorophenol phenol		nitrosenzene N-nitrosedimethylamine
bromomethane carbon tetrachloride	2.4,6-trichlorophenol		N-nitrosodi-n-propylamine N-nitrosodiphenylamine
chlorobenzana	BASE/NEUTRALS		phenanthrene
chloroethane 2-chloroethyl vinyl ether	- acenaphthene acenaphthylene		2,3,7,8-tetrachlorodibenzo-p-dioxin
chloroform	anthracene benzidine		1,2,4-trichlorobenzene
chloromethane dibromochloromethane	benzo(a)anthracene		□ PESTICIDES:
1,2-dichlorobenzene	benzo(a)pyrene benzo (b) fluoranthene	 : .	aldrin alpha-BHC
1,4-dichlorobenzene	benzo (q.h.i) perylene		beta-BHC
1,1-dichloroethane	benzo (k) fluoranthene bis (2-chloroethoxy) methane		gamma-BHC delta-BHC
1,1-dichloroethene trans-1, 2-dichloroethene	bis (2-chloroethyl) ether bis (2-chloroisopropyl) ether		chlordane 4.4'-DDD
1,2-dichloropropane	bis (2-ethylhexyl) phthalate		4,4-DDE
1, 3-dichloropropene, cis 1, 3-dichloropropene, trans	4-bromophenyi phenyi ether butyi benzyi phthalate	_ . 	4,4-DDT dieldrin
ethyl benzene 37.15	2-chioronaphthaiene		alpha-endosulfan
methylene chloride 1,1,2,2-tetrachioroethane	4-chlorophenyl phenyl ether chrysene		beta-endosulfan endousulfan sulfate
tetrachloroethene	dibenzo (a,h) anthracene 3,3-dichlorobenzidine		endrin endrin aldehyde
toluene 41.3	diethyl phthalate		heptachlor epoxide
1,1,2-trichloroethane trichloroethane	dimethyl phthalate di-n-butyl phthalate		. heptachior
vinyl chloride	. di-n-octyl phthalate		Y PCB-1016
ACIDS:	2,4-dinitrataluene 2,6-dinitrataluene		PCB-1221 PCB-1232
4-chloro-3-methylphenol 2-chlorophenol	1,2-diphenylhydrazine		V PCB-1242 V PCB-1248 V /
2,4-dichlorophenol	fluoranthene fluorene		Y PCB-1254 2514
2,4-dimethylphenol 4, 6-dinitro-2-methylphenol	hexachlorobenzene hexachlorobutadiene		PCB-1250 21.0
Gas Chromatography results:	Rin Moth	od 203	on Volatilee
Thin-Layer Chromatography results:		_	
		—————	
Infrared Spectroscopy (a) methods utiliz	red: Smcox tost C		
	Note: St.	API Gravity: .	
(b) results: 2910 cm - T	4 + - M 1 - 1 - 1 - 1		
1350 51.0	ict - Moderiti		
	101 - Huderali	Distillation Ra	ange:
Ultraviolet/Visible Spectroscopy results:	<u> </u>		gc.
		_	
0 117.4			
Special Tests: (specify)	ed spectru a	nd GC/	FID resemble Dies
iclusions Finth Litrary	ed specific a	<u> </u>	LID AGRETIME DIG
			

MSD ENVIRONMENTAL COMPLIANCE LABORATORY SPECIAL SAMPLE FORM

Reference 13

SPEC	IAL SAMPLE	FORM	ili. Godenski station	yd. An er en er
Lab. No. 886 Co	mp CKGrab	Date Received	8/9/	93
Sample Date 8/9/93	Sample T	me: 0843	to	
Requested by: HEDMO	ND/	ollected by:	AM E	
Sample Source: MH H M	1412 F-6	A1 T	uck No	
Sampling Location: WEXT TO FLOO.				
Reason for sample: To DETERMINE	IF PCB'	PRESENT		
☐ Trunk ☐ Sanitary ☐ Stream	Storm	☐ Seepage	☐ STP [] Hauler
☐ Industry ☐ Other (explain)				
Analysis: except	ug/L 🛭 mg/kg	□ % comp	Other	
□ pH(units)	□ F		i∵Hg	
□ SPC(umhos/cm)	□ CI		l As	
□ ALK	□ CN	:: 	Ва	
□ ACI	CNA		l Be	·
□ TS	□ KJN		Cd	
🗆 ss	□ NH ₃	<u> </u>	Cr	 .
□ vss	□ NO ₃		l Cu	
□ %V	□ №		l Fe	·
□ SET(mi/L)	□ РНТ		l Pb	· · · · · · ·
□ GRE	□ PHO :	· □	l Ni	· .
□ BOD	□ so ₄		l Se	
□ COD	□ so ₃		I Ag	<u> </u>
□ TOC	□ s		l Zn	· · · · · · · · · · · · · · · · · · ·
□ PHE	□ SUR		1 ті	· ·
o	<u> </u>		1 Sb	<u> </u>
	<u> </u>		ı <u></u>	
o	D		l	
□ Color:	□ Cr ⁺⁶		l	
□ Odor:		D Töt. Ha	rdness	· .
☐ Appearance:	<u> </u>		lorine	<u>.</u>
Organics IR GC	LEL RAD	UV FL	JOR 🛛 ID_	
Biological: Bioassay	7:	Total Coli:_		No./100ml
Microsco	opic:	Fecal Coli:_ FecalStrep:		No./100ml No./100ml
Remarks: CHECK FOR PCB'S				
nemarks				
			· · · · · · · · · · · · · · · · · · ·	

8/17/93

by: MARIO J. DRPRIM

MSD ENVIRONMENTAL COMPLIANCE LABORATORY INSTRUMENTATION ANALYSIS

Lab. No. 888 Sample Source: 1		6A1 (#14)	_ Date Re	ceived 8/9	1/13
Sample Date 8/9/93 Time: 082	1 2 (# \$ 1) # 1 + 2 1	€ Grab □ Comp	Collected	by:	
A IR AGC ULEL BRAD UV	· · · · · · · · · · · · · · · · · · ·	rlc. 🗆			
Priority Pollutant mg/L (6 VOLATILES: acrolein acrylonitrile benzene bromodichioromethane bromodichioromethane bromodichioromethane carbon tetrachloride chlorobenzene chloroethane 2-chloroethyl vinyl ether chloromethane dibromochloromethane 1,2-dichlorobenzene 1,3-dichlorobenzene 1,1-dichloroethane 1,1-dichloroethane 1,1-dichloroethane 1,1-dichloroethene 1,2-dichloropropene, cis 1,3-dichloropropene, cis	except as noted) ACIDS: (Cont'd) 2.4-dinitrophenol 2-nitrophenol 4-nitrophenol 4-nitrophenol pantachforophenol pantachforophenol pantachforophenol BASE/NEUTRALS acenaphthene acenaphthylene anthracene benzo(a)pyrene benzo(a)pyrene benzo (b) fluoranthene benzo (b) fluoranthene benzo (c),hij perylene benzo (k) fluoranthene bis (2-chloroethoxy) metha bis (2-chloroethoxy) ether bis (2-chloroethoxy) phthalate 4-bromophenyl phenyl ethe butyl benzyl phthalate 2-chlorophenyl phenyl ethe butyl benzyl phthalate 4-chlorophenyl phenyl ethe chrysene	ne er	hexaci inden isophic naphti nitrob N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-nitro N-n	naiene enzene poodimethylamine poodimethylamine poodimethylamine poodimethylamine nithrens tetrachtorodibenzo-p-c nchlorobenzene FICIDES: BHC a-BHC BHC ane DD DE	
tetrachioroethene toluene 1,1,1-Inchloroethane 1,1,2-Inchloroethene trichloroethene vinyl chlonde ACIDS: 4-chloro-3-methylphenol 2-chlorophenol 2,4-dichlorophenol 2,4-dimethylphenol	dibenzo (a,h) anthracene 3,3-dichlorobenzidine diethyl phthalate dimethyl phthalate di-n-butyl phthalate di-n-octyl phthalate 2,4-dinitrotoluene 2,6-dinitrotoluene 1,2-diphenylhydrazine fluoranthene fluorane hexachlorobenzene hexachlorobutadiene	203 on	endrin	aidehyde chior epoxide chior 016 221 223 242 248 254 260 hene	Z1.0
	e: e m 1) e;	Micsel F			
☐ Thin-Layer Chromatography results:					· · · · · · · · · · · · · · · · · · ·
Infrared Spectroscopy (a) methods utilized: (b) results: 2920 cm-1- 51 row 1460 cm-1- Moder 1:50 cm-1- Moder	Ate-Singlet	☐ API Gravity: ☐ Solubilities:			<u> </u>
Ultraviolet/Visible Spectroscopy results:		_	_		
☐ Special Tests: (specify)		·			
Conclusions Infrared spectra	and GC	1FIN reso	vable	Diesel	Fueli
		7/12/92		N. (T()

MSD ENVIRONMENTAL COMPLIANCE LABORATORY

Lab. No. 888	7 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	A. J. C. C. L. 1448 M. A. K. N. N. S. C. C. C. S.	Date Received	8/9/93
Sample Date 8/9	termon/D		OP 2 5	7E 10
	HFMH1		50 10 1 1 1 1 3 4 4 TH	
				and the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second o
Sampling Location: NEX	TO DETERMIN	ACL TE DC	R'C PRESEN	/77
	y stream			
Analysis: axcept as noted	□ mg/L □ ug/	`L □ mg/kg	□ % comp	□ other
□ pH	(units) □	F	D i	lg .
SPC :	(umhos/cm)	CI		4
D ALK		.CN	D 8	ia
D ACI		CNA	, D E	3e
□ TS	•	KJN	🗆 0	id
□ ss		NH ₃		>r
□ vss		NO ₃		Cu
□ %V		NO ₂	D F	•
□ SET	(mi/L) 🛚	PHT	D F	Pb
GRE		PHO		
□ BOD		so ₄	D S	
□ COD		so ₃		
□ TOC		S	0 2	<u></u>
D PHE	·.□	SUR		
				Sb
<u> </u>				
				<u></u> : <u></u>
□ Color:		Cr ⁺⁸		
□ Odor:				•
Appearance:			D Tot. Chlori	
Organics IR	GC LEI	L [RAD [UVFLUOR	Z 70
Biological:	Bioassay:	-	Total Coli:	
	Microscopi	c:	Fecal Coli: FecalStrep:	No./100ml
Remarks:	OR PEB'S			
Tomarks.				
<u> </u>				
-				
	Date Transmi	ned: <u>8/17</u>	/93	by: MARIO J. DEPLIN

Reference 12

MSD ENVIRONMENTAL COMPLIANCE LABORATORY INSTRUMENTATION ANALYSIS

ab. N			_ Sample So	ource: _	Wet We			Da	te Received 7-9-4	93
ample	e Date 🔟	7-8-93	Time:			_ □ Gra	ab 🗆 Comp	Coll	ected by:	
(IR	.D GC	□ LEL	☐ RAD	□ uv	☐ FLUOR	☐ TLC	<u> </u>			
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Ulti	raviolet∕Vi	sible Spect	roscopy res	ults:			Distillation Ra	-		
nclus		s: (specify)		cic	00	" PCB Samp	Screening		//50 Dilution and #270	> 50pp
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MSD ENVIRONMENTAL COMPLIANCE LABORATORY INSTRUMENTATION ANALYSIS

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Lab. No. 434	Sample Source: _	UST Bree	Hlyn	4 Mouna	L Da	te Received	73
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XIR XGC LLEL	□ RAD □ UV	☐ FLUOR ☐	TLC	<u> </u>			·
☐ Priority Pollutant	mg/L	(except as noted)	•		BASE/NEUTRALS: (Confinerations	'd)
VOLATILES:		ACIDS: (Cont'd) 2.4-dinitrophenol		·	=	hexachloroethane indeno (1.2.3-cd) pyrene	
acrylonifnie benzene bromodichigromethane		2-nitrophenol 4-nitrophenol pentachlorophenol			_	isophorone naphthalene nitrobenzene	
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carbon tetrachloride chlorobenzene chloroethane		BASE/NEUTRALS acenaphthene		<u> </u>	. =	phenanthrene pyrene	
2-chloroethyl vinyl ether chloroform chloromethane		acenaphthylene anthracene benzidine				2.3.7,8-tetrachlorodibenzo-p-dioxin 1.2.4-trichlorobenzene	
dibromochioromethane 1.2-dichiorobenzene 1.3-dichiorobenzene		benzo(a)anthracene benzo(a)pyrene benzo (b) fluoranthene				PESTICIDES: aldrin alpha-BHC	
1,4-dichlorobenzene 1,1-dichloroethane		benzo (q.h.i) perylene benzo (k) fluoranthene				beta-BHC gamma-BHC	
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1,1,2,2-tetrachioroethane tetrachioroethene toluene		dibenzo (a.h) anthracene 3,3-dichlorobenzidine			=	endousulfan sulfate endrin endrin aldenyde	
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vinyl chloride		di-n-octyl phthalate 2,4-dinitrotoluene			₹ _	PC8-1016 PC8-1221 PC8-1232	<u> </u>
4-chloro-3-methylphenol 2-chlorophenol	=	2,6-dinitrotoluene 1,2-diphenylhydrazine fluoranthene			爻	PCB-1242 PCB-1248	<u> </u>
2,4-dichlorophenol 2,4-dimethylphenol 4, 6-dinitro-2-methylphenol		fluorene hexachlorobenzene hexachlorobutadiene		<u> </u>	之	PCB-1254 PCB-1260- toxaphene	39.0 41.0
Gas Chromatography	results:						
Thin-Layer Chromatog	graphy results:		A	Appearance:	_0	ark cil	
Infrared Spectroscopy	(a) methods utilized	: smear test				sline of 101	
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onclusions Infra		a on Su	~#	to # 4	34	and #270 a	٣
similar.							
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Reference 16

4.4

Rules of Department of Natural Resources Division 20—Clean Water Commission Chapter 7—Water Quality

Title	·	Page
10 CSR 20-7.010	Prevention of Pollution from Wells to Subsurface Waters of the State (Rescinded July 10, 1980)	3
10 CSR 20-7.015	Effluent Regulations	3
10 CSR 20-7.020	Effluent Regulations (Rescinded July 11, 1980)	10
10 CSR 20-7.030	Water Quality Standards (Rescinded December 11, 1977)	10
10 CSR 20-7.031	Water Quality Standards	10

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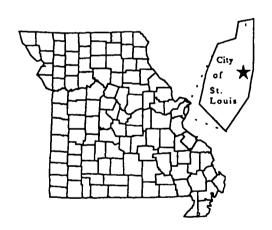
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PRELIMINARY ASSESSMENT

MOUND STREET PCB'S CITY OF ST. LOUIS, MISSOURI

March 21, 1994

Missouri Department of Natural Resources
Hazardous Waste Program



Prepared By

Don Falls

Don Falls Environmental Specialist Reviewed By

James L. Kavanaugh Chief, Site

Chief, Site Evaluation Unit Approved By

1 4

Edwin Knight

Chief

Superfund Section

Telephone or Conference Record December 29, 1993 Page 2

production capacity of 30 million gallons a day and is blended with water from the Chouteau Island intake. The East St. Louis intake provides approximately 60% of the total according to Mr. Reed.

FINAL RESULTS:

This information will be incorporated into the Mound Street PCB Preliminary Assessment.

Don Falls

Environmental Specialist

DF:so

DEPARTMENT OF NATURAL RESOURCES Division of Environmental Quality Hazardous Waste Program

TELEPHONE OR CONFERENCE RECORD

File: Mound Street PCB Site Date: December 29, 1993

TELEPHONE CONFERENCE

Incoming (X) Field ()
Outgoing () Office (X)

SUBJECT: Mound Street PCB Site, Drinking Water Intakes

PERSONS INVOLVED

Name Rèpresenting

Eddie Starbuck

Don Falls

Sally McConkey

Richard Reed

MDNR, Geology and Land Survey

MDNR, Hazardous Waste Program

Illinois Water Survey

Illinois American Water Company

SUMMARY OF CONVERSATION:

Eddie Starbuck phoned to let me know that she had reviewed her notes from her previous work on the St. Louis Ship site and discovered a note that indicates that there is a drinking water intake located downstream of the Mound Street PCB site (approximately one mile) on the Illinois side of the Mississippi River. Her notes give the location of this intake as the SE 1/4 of the SW 1/4 of Section 11, T2N, R10W.

Eddie said she obtained this information from the Illinois Water Survey approximately two years ago and that their phone numbers are (217) 333-7223 and 333-5482.

<u>ACTION TAKEN</u>

I phoned the Illinois Water Survey and spoke with Ms. Sally McConkey. Ms. McConkey referred me to the Illinois American Water Company at (618) 874-1873. I then phoned Illinois American Water Company and spoke with a Mr. Richard Reed, Assistant Production Supervisor. Mr. Reed informed me that the Illinois American Water Company utilizes two water intake locations, one at Chouteau Island, which is about 10 miles upstream from the Mound Street site, and the intake in Section 11 in East St. Louis, Illinois. Mr. Reed said that their water company serves 19 medium to small communities with a combined service population of approximately 300,000. He also said that the East St. Louis intake has a

.<*

RIVER= TOTAL COUNTYSTOTAL TRAMMEL NET CILL NET HOOP NET TROT LINE POUNDS DOLLARS POUNDS DOLLARS POUNDS DOLLARS POUNDS DOLLARS POUNDS DOLLARS POUNDS POLLARS ASTATIC CARP . 181 GRASSCARP Z26Q PADOLEFISH **Z27** EEL SAR Q S CARP SUCKER STURGEON BOMFIN BLUE CAT CHANNEL CAT BULLHEAD FLATHEAD DRLM 32B CARP 51Z 6 I 1737D BUFFALD 960 8733Z 308E TOTAL 476519 149551 DAYS

> Total reported harvest from the Missouri, Mississippi, + ST Francis Rivers in

DEPARTMENT OF NATURAL RESOURCES Division of Environmental Quality Hazardous Waste Program

Reference 18

TELEPHONE OR CONFERENCE RECORD

File: Mound Street PCBs Date: March 15, 1994

TELEPHONE (314) 882-9880 CONFERENCE

Incoming () Field ()
Outgoing (X) Office (X)

Sillo (A

SUBJECT: Fish Consumption From the Mississippi River at St. Louis

PERSONS INVOLVED

<u>Name</u> <u>Representing</u>

Jack Robinson

Don Falls

Missouri Department of Conservation

MDNR, Hazardous Waste Program

SUMMARY OF CONVERSATION:

I contacted the Missouri Department of Conservation (MDOC) office in Columbia to see if their department has any records concerning annual fish consumption from the Mississippi River at St. Louis. I was referred to Mr. Jack Robinson, a fisheries biologist with the MDOC who is responsible for records of commercial fish harvest on the Missouri, Meramec, and Mississippi Rivers.

Mr. Robinson explained that MDOC did not have information on actual consumption of fish, but only on the numbers caught by commercial fishermen. This information also does not include the numbers of fish taken and eaten by sports fishers.

Mr. Robinson said that he would send me the information on annual harvest from the Mississippi River later in the week. Mr. Robinson suggested that the Missouri Department of Health might have figures on the actual amount of fish consumed because of their previous studies on Chlordane and fish.

FINAL RESULTS:

This information will be included in the Mound Street PCBs Preliminary Assessment.

Don Falls

Environmental Specialist Hazardous Waste Program

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Reference 20

SPECIAL PROBLEM INVESTIGATION DEPARTMENT OF ENVIRONMENTAL COMPLIANCE

CONTROL NUMBER: 93 07 08 DAY

CROSS REFERENCE:
NEW FILE: BROOKLYN STREET PUMP STATION
TO: HOWARD EDMOND FROM: SI SMITH DATE ASSIGNED: 07-08-93 TIME: 0800 SUBJECT: OIL IN BROOKLYN STREET PUMP STATION SPECIAL INSTRUCTIONS: LOCATE SOURCE OF OIL ENTERING BROOKLYN STREET PUMP STATION AND TAKE CORRECTIVE ACTION
STREET ADDRESS: FOOT OF BROOKLYN STREET ZIP CODE: 63102 NEAREST INTERSECTION: MULLANPHY MAP COORDINATES: 28-D-19
TYPE OF PROBLEM: OIL ENTERING PUMP STATION TRUNK SEWER: BCH TRTMT PLANT: BISSELL WATER COURSE: N/A
VOLUME: UNKNOWN QUANTITY: UNKNOWN CAUSE: SOURCE: POSSIBLE LEAKING TANK
PERSON REPORTING:TELEPHONE:
DATE OF INCIDENT: ON GOING RESPONSIBLE PARTY: CITY OF ST. LOUIS REGULATORY AGENCY CONTACTED: MSD, MODNR, FIRE DEPT, & CITY OF ST. LOUIS CLEAN UP BY: REACT ENVIRONMENTAL ENGINEERS
COMPLETION DATE: 08-19-93 DAMAGES BILLED (\$):
INVESTIGATIVE ACTION SUMMARY: 07-08-93 Call from MSD pump station stating oil was entering Brooklyn pump station. I obtained a sample for analysis. Started looking for possible source. Located an under ground storage tank, which has large hole in the top, on the south side of a vacant building located just west of the pump station and south of Brooklyn Street. A sample of the oil still in this tank was collected. The analysis of the oil from the pump sta contained 47 mg/l of 1254 pcb's and the oil from the tank contained 39 mg/l of 1254 pcb's. I contacted Charlie Gay of the Fire Marshall's office and met him at the site on 07-16-93 to show him the problem and to obtain help in finding owner of property. Charlie contacted Chief Horn, informed him of the situation, Chief Horn contacted James Garavaglia of the comptroller's office. We met at site. It was determined at this time that the City of St. Louis is the owner of the east half of the property between 1st St. and the flood wall and Wheeler Ferry Company owns the west half Cont. Page two
CONCLUSION: It appears at this time an underground storage tank is the cause of this problem. Also the possibility exist of ground saturation of oil from an old Union Electric building.
Copy sent to:Date:

cc:

Memo No	Job No. <u>010865-37030</u>	<u> </u>
Date June 3 19 96	Time 10130	<u>a</u> m
Between (SVC) Michael McCurdy	Placed	Rec'd
And John Schiermann	Tel (<u>68)</u> 874-	1873 / 879-0523
Of Ih-American Water Company		
Subject Raw water sampling & au	valysis for East	St Louis Cutake
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the raw water after a River to determine their P He stated they have collected the Chorteau Island intake not at the East St Louis	spill in the MAC dosage dur d saw water so after a spill	ississippi ing treatment, amples at
Asked if they have any raw w.	ater data with	n the last
o He stated the last raw wa conducted in 1992 or 199	ter sampling wa	s probably
		d fax a
copy of analysis reports h	e ruds.	
Asked what his title is.		
· Water Quality Supervisor		
He called back about 1130am analysis reports for 1992 for reports are attached.		
		
Original:	Pag	ge of

SPECIAL PROBELM INVESTIGATION continued

08-04-08 Met with Terminal Railroad, consulting company and fire department underground tank is being pumped out today. Tank will be removed as soon as the water level goes down. The infrared pictures that were taken do not indicate the source of oil in pump station is from tank. They did indicated a possible location of another underground tank on the city property just south of Mound Street. Fire department was notified.

08-08-93 1015 Hrs Received call from Chief Horne requesting my presents at 1st & Mullanphy. Three manholes were located along the flood wall which contained a large amount of oil. Could not determine at this time where oil is coming from. The manholes are holding water. I will return 08-09-93 to collect samples to find out if pcb's are present. There is some question as to the manholes belonging to MSD or the City.

08-09-93 Collected oil samples from all three manholes. Waiting on analysis.

08-10-93 Met Charlie Gay of fire department. He wanted to know where the manholes were located that contain this last source of oil. Also wanted to look at clean up that was preformed on the underground tank. The tank has been pumped and washed out. The oil has been remove.

08-17-93 The analysis of the samples taken from the manholes indicated they also contained a small amount of pcb 1254. These manhole belong to the city and Fire Marshall Horne was notified of this fact and also the results of the analysis on the manholes. The pads at the pump station have not been changed as of 08-17-93. Chief Horne was also informed of this situation.

08-19-93 The pads at the pump station were changed yesterday 08-18-93. The City of St. Louis is now taking care of having this problem cleaned up.

SPECIAL PROBLEM INVESTIGATION continued:

Page 2_of 3_

93 07 08
Yr Mo Day
BROOKLYN PUMP STATION

DETAILS OF INVESTIGATION: <u>The City is to locate owners of the property and take action on getting area cleaned up. They contacted React Environmental Engineers.</u>

- O7-16-93 Met with city engineers and React to determine what is to be done.

 At the present time React is placing booms in the wet well of the pump station to soak up the oil entering. It was not determined at this time what to do with the underground tank. React wanted to trench along the sewer entering the pump station but due to the high water table and the possibility of causing a major problem with the flood waters no trench at this time.
- 07-26-93 Returned to the pump station to follow up on the clean up. React did not place booms in station they only put absorbent pads. The pump station maintenance crew removed the pads to prevent them from being pulled into the pumps since they were not tied down. I contacted the city comptroller and informed him of this problem. React contacted me and I told them that they had to use booms inside the station and tied to prevent any possibility of being pulled into the pumps or move outside station into the first manhole up stream to collect the oil.
- 07-27-93 Met Chief Horn at the pump station. React has installed boom and they are tied. Checked the underground tank and nothing has been done to the tank. It still has oil standing in the bottom. It appears that there could be at least 6 to 8 inches of oil in the tank. There is still a small oil sheen on the water entering the station. Chief Horn is to find out what is to be done with the tank and let me know.
- 07-28-93 Met Chief Horn and Clifford Trice, chief engineer for Terminal Railroad Association at the site of the underground tank. It has been determined that the property belongs to Terminal Railroad. They are to take steps to remove the tank.
- 07-29-93 Received call from Daryl Bowles, Gehm Corp, rep for Terminal Railroad requesting copies of analysis on pump station and tank. They are to preform an infrared test on area to try and determine just where the oil is entering the sewer. Test is to be done first week of August. Copies of analysis sent.
- 08-03-93 Made follow up on progress of clean up. The area around the tank has been cleaned up and graded but the opening to the tank has been covered. No way at this time to tell if tank has been pumped. The booms at the pump station do not appear to have been serviced since they were last installed.

3.0.1 General Considerations
The Mound Street site is located on the riverfront in the City of St.
Louis. It is east of Second Street between Mound and Brooklyn Streets.

3.0.1.1 Groundwater target distance limit

The site is located on a narrow strip of alluvium between an area of limestone bedrock and the Mississippi River. (Ref. 1) The groundwater within the alluvium will move generally in the direction of the river, that is, to the east or southeast, and it will eventually discharge to the river. During unusually high river stages, the groundwater may temporarily flow away from the river. Since no confining layer is known to exist between the alluvial aquifer and the bedrock of Mississippian limestone (Ref. 4, p. I-136), the groundwater target distance should extend for a four mile radius from the site.

3.0.1.2 Aquifer boundaries

The shallowest material at the site is fill material. Its thickness is unknown, but is estimated at 15 to 18 feet.

The alluvium consists of a mixture of stratified sediments deposited by the river. Based on findings at a nearby site, the alluvium is made up of clay, and silty clay in the top 10 to 30 feet, but becomes generally coarser with depth, becoming silty sand and sand. Lenses of gravel can be found. (Ref. 2, p. 3-19 to 3-33) The total thickness of the alluvium is estimated at approximately 80 feet. The alluvial aquifer can be expected to yeild large quantities of fresh water. (Ref. 15, p. 21) The depth to water will be approximately 20 feet. The bedrock is Mississippian aged limestone.

The Mississippian System in this area is made up of a sequence of limestone, cherty limestone, and sandy or shaley limestones. This system includes, in decending order; the Ste. Genevieve Limestone, St. Louis Limestone, Salem Formation, Warsaw Formation, Burlington-Keokuk Limestone, and the Fern Glen Formation. (Ref. 13) The Salem and Warsaw formations are generally shaley limestones and do contain shale beds in the St. Louis area. (Ref. 14, p. 101-110) However, the thickness and position of shale horizons varies within this area (Ref. 14, figs 88, 89, 91, 92) The shallowest reliable aquitard in the area is the Maquoketa Shale at the top of the Ordovician System. The Mississippian aquifer might yield small quantities of fresh water in the target area, (Ref. 15, Ref. 16) but very little data is available. Any groundwater below the Maquoketa is expected to be mineralized. (Ref. 15, Ref. 16)

3.0.1.2.1 Aquifer interconnections

Drilling at a nearby site encountered no confining material between the alluvium and bedrock. (Ref. 4, p. I-136) The bedrock and alluvium can be considered one aquifer for HRS purposes.

Reference 21

STATE OF MISSOURI DEPARTMENT OF NATURAL RESOURCES

- MEMORANDUM -

DATE:

December 29, 1993

TO:

Don Falls, Environmental Specialist, HWP, DEQ

FROM:

Edith Starbuck, Geologist, Environmental Geology Section, DGLS

SUBJECT: PA/SI Geology Report for the Mound Street Site, St. Louis City

Enclosed is my report on the geologic and hydrologic considerations for the Mound Street Site. The report addresses specific components of the HRS. Please let me know if you have any questions or comments or need additional information.

RECEIVED

94 JRN 3 RM 11 27

HAZANDGUS WASTE FELIGRAM

HAZANDGUS WASTE FELIGRAM

HAZANDGUS WASTE FELIGRAM

NATURAL RESOURCES

4.1.1.2 Target distance limit

The target distance limit should include the Mississippi River from the area downgradient from the site to a point fifteen miles downstream. This should be at approximately Mississippi River mile marker 166.

4.1.2.1.2.1 Potential to release by overland flow

4.1.2.1.2.1.2 Runoff

The drainage area for the site is less than 50 acres. (Ref. 8) the drainage area value is 1. (Ref. 3, table 4-3) The soil at the site appeared to be somewhat coarse textured. (Ref. 7) A moderate infiltration rate would be expected. The soil group designation is B. (Ref. 3, table 4-4) The two-year, 24-hour rainfall for the area is approximately 3.5 inches. (Ref. 9)

The rainfall/runoff value is 4. (Ref. 3, table 4-5) The runoff factor value is 1. (Ref. 3, table 4-6)

4.1.2.1.2.1.3 Distance to surface water

Since no ditches or channels were noted, the distance to surface water is estimated as a straight line between the site and the river. This distance is about 300 feet. (Ref. 8) The distance to surface water factor value is 20. (Ref. 3, table 4-7)

4.1.2.1.2.2 Potential to release by flood

4.1.2.1.2.2.2 Flood frequency

V The site is located on top of a flood wall constructed to withstand a 500-year flood. It is elevated above the floodplain and therefore, the flood frequency factor value is 0. (Ref. 3, table 4-9)

4.1.2.3.1 Nearest intake

On the Missouri side of the Mississippi River, the nearest intakes are approximately 10 miles upstream from the site and 126 miles downstream. (Ref. 11) Information from the Illinois Water Survey indicates that there is a public water supply intake within the target area on the Illinois side. This intake is in the SE 1/4 of the SW 1/4 of section 11, T.2 N., R.10 W. in St. Clair County, Illinois. (Ref. 10) This would be less than one mile downstream from the site.

The Mississippi River is a very large river with an average flow greater than 100,000 cfs. (Ref. 12, p. 180) The assigned dilution weight is 0.00001. (Ref. 3, table 4-13) Because of this small dilution weight, the intake factor value is 0. (Ref. 3, p. 51613)

3.0.1.2.2 Aquifer discontinuities

The alluvial aquifer is bounded by the limits of its deposition within the target area. Bedrock faulting in the area does not completely transect the Mississippian aquifer. No aquifer discontinuity exists within the target area.

- 3.1 Likelihood of release
- 3.1.2 Potential to release
- 3.1.2.2 Net precipitation

The assigned net precipitation factor value for the site is 3. (Ref. 3, figure 3-2)

3.1.2.3 Depth to aquifer

The depth to groundwater at the site is approximately 20 feet. The alluvial sediments at this depth may not be good aquifer material, however, the depth at which the alluvial material is saturated should be considered the aquifer. The depth to aquifer factor value is 5. (Ref. 3, table 3-5)

3.1.2.4 Travel time

The hydraulic conductivity for the shallow part of the alluvium consisting of silty clay and clay has been calculated at 9.9 x10 $^{-6}$. (Ref. 4, p. 6-26) It's thickness ranges from 10 to 30 feet. The travel time factor value is 15. (Ref. 3, table 3-7)

3.3.1 Nearest well

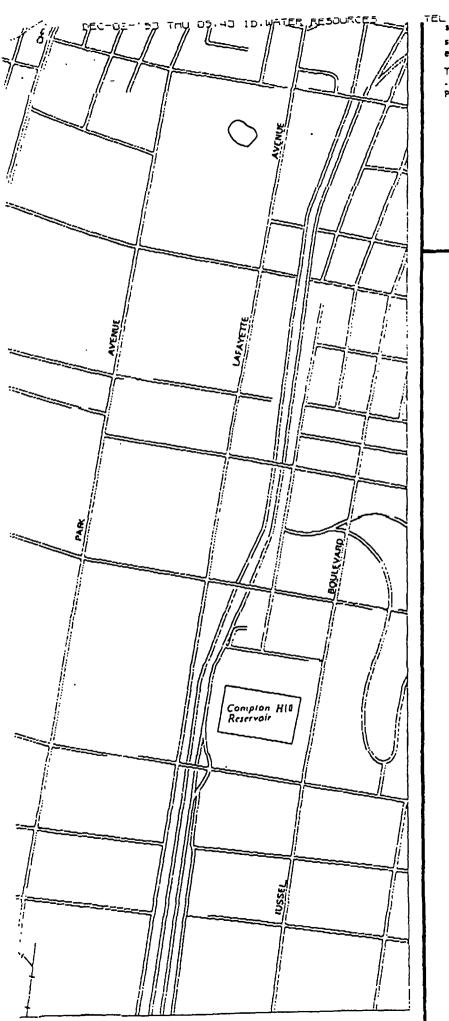
There is not believed to be any groundwater use within the target area. (Ref. 4, p. I-136; Ref. 5; Ref. 6). The nearest well factor value is 0. (Ref. 3, table 3-11)

3.3.4 Wellhead protection area

There is no wellhead protection area within the target area.

4.1.1.1 Definition of hazardous substance migration path for overland/flood migration component

The site is located on top of the flood wall constructed to protect the area from flooding. No channels or ditches were observed crossing the site. (Ref. 7) Much of the site is relatively flat. The eastern edge of the area slopes to the east, toward the river. The site is less than 300 feet from the river.



EL 140.014-701-6470 #656 FD2
shown on this map to determine when actuarial rates apply to
structures in the zones where elevations or depths have been

To determine if flood insurance is available in this community, and the following flood insurance is available in this community.

Program, at \$800, 638-6620, or \$800, 424-8872.



APPROXIMATE SCALE

1000

1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CITY OF ST. LOUIS, MISSOURI INDEPENDENT CITY

PANEL 10 OF 40
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER 290385 0010 A

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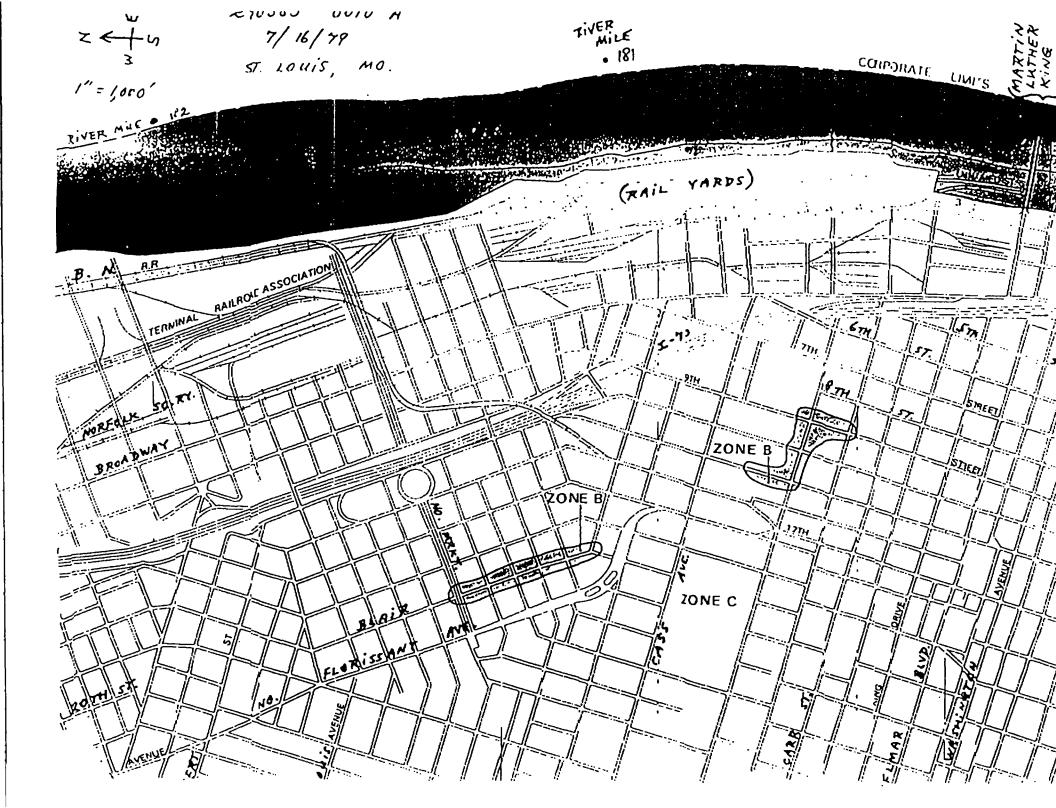
JULY 10,1979

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT FEDERAL INSURANCE ADMINISTRATION

REFERENCES

- 1. Geologic Map of St. Louis City and County, Missouri, K.G. Brill, DGLS, 1991.
- 2. Remedial Investigation Report for the St. Louis Site, prepared for U.S. Department of Energy under the Formerly Utilized Site Remedial Action Program by Bechtel National, June 1991.
- Federal Register, vol. 55, No. 241.
- 4. Radiological, Chemical, and Hydrogeological Characterization Report for the St. Louis Downtown Site in St. Louis, Missouri, prepared for the U.S. Department of Energy under the Formerly Utilized Site Remedial Action Program by Bechtel National, September, 1990.
- 5. Census of Missouri Public Water Systems, 1991, DEQ.
- 6. Well records for the area on file at DGLS.
- 7. Field observations, 10/6/93.
- 8. Granite City 7.5 minute topographic quadrangle, U.S. Geological Survey, 1954, photorevised 1982.
- 9. Rainfall Frequency Atlas of the United States, Technical Paper No. 40, U.S. Department of Commerce.
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- 12. Water Resources Data, Missouri, Water Year 1989, U.S. Geological Survey Water-Data Report MO-89-1.
- 13. Geologic Map of St. Louis City and County, Missouri, K.G. Brill, DGLS, 1991.
- 14. Paleozoic Succession in Missouri-Part 4, Mississippian System, Report of Investigation No. 70, Part 4; Thomas L. Thompson; DGLS, 1986.
- 15. Water Resources, St. Louis Area, Missouri, Water Resources Report No. 30; Don E. Miller, et. al.; DGLS/USGS; 1974.
- 16. Groundwater Areas Map <u>in</u> Groundwater Maps of Missouri; Missouri Geological Survey and Water Resources; 1963.

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APPENDIX E CITED REFERENCES

EPA540-R-92-026
OSWER Directive 9346450752November 1992-

Reference 33

The Hazard Ranking System Guidance Manual

Interim Final

Hazardous Site Evaluation Division
Office of Solid Waste and Emergency Response
U.S. Environmental Protection Agency
Washington, DC 20460



Friday December 14, 1990

Reference 35



Environmental Protection Agency

40 CFR Part 300 Hazard Ranking System; Final Rule

